Series 90-30 PLCs

The Series 90-30 PLCs are a family of controllers, I/O systems and specialty modules designed to meet the demand for versatile industrial solutions. With a single overall control architecture and modular design, the Series 90-30 is trusted worldwide in such applications as high speed packaging, material handling, complex motion control, water treatment, continuous emissions monitoring, mining, food processing, elevator control, injection molding, and many more.

One reason for the versatility of the Series 90-30 is the large variety of discrete and analog I/O modules (over 100 modules), as well as specialty modules, that are available. In addition, GE Intelligent Platforms offer a wide range of high-level communication options, from a simple serial connection to a high-speed Ethernet interface and a number of bus modules.

Proficy Machine Edition

Proficy Machine Edition is an advanced software environment for the development and maintenance of machine level automation. Visualization, motion control, and execution logic are developed with a single programmer.

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Baseplates page 1.88

Power Supplies pages 1.89-1.90

Serial Communications Modules page 1.112

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Portable Program Download Device (PPDD) pages 1.119-1.120

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VersaMotion pages 1.125-1.133

Publication Reference Chart

GFK-0255	Series 90 Programmable Coprocessor Module & Support Software User's Manual
GFK-0293	Series 90-30 High Speed Counter User's Manual
GFK-0356	Series 90-30 PLC Installation and Hardware Manual
GFK-0412	Series 90-30 Genius Communications Module User's Manual
GFK-0467	Series 90-30/20/Micro PLC CPU Instruction Set Reference Manual
GFK-0529	Series 90 PLC SNP Communications User's Manual
GFK-0582	Series 90 PLC Serial Communications Driver User's Manual
GFK-0585	Series 90 PLC SNP Communications Driver User's Manual
GFK-0631	Series 90-30 I/O Link Slave Interface User's Manual
GFK-0664	Series 90-30 Axis Positioning Module (Power Mate-APM) Programmer's Manual
GFK-0695	Series 90-30 Enhanced Genius Communications Module User's Manual
GFK-0712	Series 90 Digital Event Recorder User's Manual
GFK-0726	State Logic Processor for Series 90-30 PLC User's Guide
GFK-0771	C Programmer's Toolkit for Series 90 PCMs User's Manual
GFK-0772	PCM C Function Library Reference Manual
GFK-0781	Power Mate APM for Series 90-30 PLC Follower Mode User's Manual
GFK-0814	C Programmer's Toolkit for Series 90 PCM Quick Reference Guide
GFK-0823	Series 90-30 I/O Link Master Module User's Manual
GFK-0828	Series 90-30 Diagnostic System User's Guide
GFK-0840	Power Mate APM for Series 90-30 PLC Standard Mode User's Manual
GFK-0854	Series 90 Sequential Function Chart Programming Language User's Manual
GFK-0898	Series 90-30 PLC I/O Module Specifications Manual
GFK-1028	Series 90-30 I/O Processor Module User's Manual
GFK-1034	Series 90-30 Genius Bus Controller User's Manual
GFK-1037	Series 90-30 FIP Remote I/O Scanner User's Manual
GFK-1056	Series 90-30 State Logic Control System User's Manual
GFK-1084	TCP/IP Ethernet Communications for the Series 90-30 PLC User's Manual
GFK-1179	Installation Requirements for Conformance to Standards
GFK-1186	TCP/IP Ethernet Communications for the Series 90 PLC Station Manager Manual
GFK-1213	Series 90-30 FIP Bus Controller User's Manual
GFK-1256	Power Mate for Series 90-30 User's Manual
GFK-1322	Series 90-30 PLC LonWorks Bus Interface Module User's Manual
GFK-1411	Series 90-30 System Manual for Windows® Users
GFK-1464	Motion Mate DSM302 for Series 90-30 PLCs User's Manual
GFK-1466	Temperature Control Module for the Series 90-30 PLC User's Manual
GFK-1541	TCP/IP Ethernet Communications for the Series 90 PLC User's Manual
GFK-1734	Power Transducer for the Series 90-30 PLC User's Manual
GFK-1868	Proficy Machine Edition Getting Started Guide
GFK-2121	Series 90-30 Profibus Modules User's Manual
GFS-062	Series 90-30 Quick Reference Guide for Maintenance
GFZ-0085	Series 90-30 Troubleshooting Pocket Guide
IC690CDU002	InfoLink for PLC CD-ROM

CPUs

For entry-level applications with low I/O counts, the CPU is embedded into the backplane, making all slots available for I/O. These modules are compatible with advanced modules such as Ethernet, various bus modules, and control. Mid-range CPU models are modular and come in various memory sizes, performance capability and increased functionality such as overrides, battery-backed clock and Programmable Coprocessor module support. The high-performance CPUs are based on the latest 386EX processor for fast computation and high throughput. They can handle up to 4,096 I/O and start at 32K of memory and are programmable in a number of standard languages.

	IC693CPU311	IC693CPU313	IC693CPU323	IC693CPU350	IC693CPU360
Product Name	**5-slot Baseplate (Model 311)**	**5-slot Baseplate (Model 313)**	**10-slot Baseplate (Model 323)**	**CPU (Model 350)**	**CPU (Model 360)**
Lifecycle Status	Active	Active	Active	Active	Active
Module Type	I/O Base with built-in CPU	I/O Base with built-in CPU	I/O Base with built-in CPU	CPU Module	CPU Module
Boolean Execution Speed (ms/K)	18	0.6	0.6	0.22	0.22
User Logic Memory (K bytes)	6	12	12	74	240
Real Time Clock	No	No	No	Yes	Yes
I/O Discrete Points	160	160	320	4096	4096
I/O Analog Points	64 In / 32 Out	64 In / 32 Out	64 In / 32 Out	2048 In / 512 Out	2048 In / 512 Out
Type of Memory Storage	RAM, EPROM, EEPROM	RAM, EPROM, EEPROM	RAM, EPROM, EEPROM	RAM, Flash	RAM, Flash
Processor Speed (MHz)	N/A	N/A	N/A	N/A	N/A
Built-in Communication Ports	One RS-485 port on power supply. Supports SNP	One RS-485 port on power supply. Supports SNP	One RS-485 port on power supply. Supports SNP	One RS-485 port on power supply. Supports SNP	One RS-485 port on power supply. Supports SNP
Total Number of Racks	1 (CPU built in)	1 (CPU built in)	1 (CPU built in)	8	8
Communications Option Modules	Serial-SNP and RTU, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP and RTU, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP and RTU, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP
Field Busses/Device Networks	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN
Software Programming Support	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer - Machine Edition	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer -Machine Edition	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer -Machine Edition	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer -Machine Edition	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer -Machine Edition
Internal Power Used	410 mA @ 5 VDC	430 mA @ 5 VDC	430 mA @ 5 VDC	670 mA @ 5 VDC	670 mA @ 5 VDC

CPUs

For entry-level applications with low I/O counts, the CPU is embedded into the backplane, making all slots available for I/O. These modules are compatible with advanced modules such as Ethernet, various bus modules, and control. Mid-range CPU models are modular and come in various memory sizes, performance capability and increased functionality such as overrides, battery-backed clock and Programmable Coprocessor module support. The high-performance CPUs are based on the latest 386EX processor for fast computation and high throughput. They can handle up to 4,096 I/O and start at 32K of memory and are programmable in a number of standard languages.

	IC693CPU363	IC693CPU366	IC693CPU367
Product Name	**CPU (Model 363)**	**CPU (Model 366 with built-in Profibus Master)**	**CPU (Model 367 with built-in Profibus Slave)**
Lifecycle Status	Active	Active	Mature
Module Type	CPU Module	CPU Module	CPU Module
Boolean Execution Speed (ms/K)	0.22	0.22	0.22
User Logic Memory (K bytes)	240	240	240
Real Time Clock	Yes	Yes	Yes
I/O Discrete Points	4096	4096	4096
I/O Analog Points	2048 In / 512 Out	2048 In / 512 Out	2048 In / 512 Out
Type of Memory Storage	RAM, Flash	RAM, Flash	RAM, Flash
Processor Speed (MHz)	N/A	N/A	N/A
Built-in Communication Ports	Three total. One RS-485 port on power supply, one RS-232 and one RS-485 port on CPU. Supports SNP, RTU Master and Slave, Serial Read and Write	One Profibus DP Slave port and RS-485 port on power supply. Supports SNP.	One Profibus DP Master, Class 1 V0 port and RS-485 port on power supply. Supports SNP.
Total Number of Racks	8	8	8
Communications Option Modules	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP
Field Busses/Device Networks	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN
Software Programming Support	Logicmaster (DOS), VersaPro (Windows), Proficy Logic Developer - Machine Edition	Proficy Logic Developer - Machine Edition	Proficy Logic Developer -Machine Edition
Internal Power Used	890 mA @ 5 VDC	940 mA @ 5 VDC	940 mA @ 5 VDC

CPUs

For entry-level applications with low I/O counts, the CPU is embedded into the backplane, making all slots available for I/O. These modules are compatible with advanced modules such as Ethernet, various bus modules, and control. Mid-range CPU models are modular and come in various memory sizes, performance capability and increased functionality such as overrides, battery-backed clock and Programmable Coprocessor module support. The high-performance CPUs are based on the latest 386EX processor for fast computation and high throughput. They can handle up to 4,096 I/O and start at 32K of memory and are programmable in a number of standard languages.

	IC693CPU370	IC693CPU372	IC693CPU374 PLUS
Product Name	**CPU (Model 370). Requires High Capacity Power Supply**	**CPU (Model 372 with built-in 10/100 Mbps Ethernet and WEB Enabled). Requires High Capacity Power Supply**	**CPU (Model 374 PLUS with built-in 10/100 Mbps Ethernet and Web Enabled). Requires High Capacity Power Supply**
Lifecycle Status	Active	Active	Active
Module Type	CPU Module	CPU Module	CPU Module
Boolean Execution Speed (ms/K)	0.15	0.15	0.15
User Logic Memory (K bytes)	240	120	240
Real Time Clock	Yes	Yes	Yes
I/O Discrete Points	4096	4096	4096
I/O Analog Points	2048 In / 512 Out	2048 In / 512 Out	2048 In / 512 Out
Type of Memory Storage	RAM, Flash	RAM, Flash	RAM, Flash
Processor Speed (MHz)	133Mhz	133Mhz	133Mhz
Built-in Communication Ports	One RS-485 port on power supply. Supports SNP	One RS-485 port on power supply. Supports SNP and two Ethernet ports; (one IP address) on CPU, 10/100 Mbps built-in switch, SRTP - channels (Producer and Consumer); EGD, Modbus TCP Client/Server and Web Diagnostics Support	One RS-485 port on power supply. Supports SNP and two Ethernet ports; (one IP address) on CPU, 10/100 Mbps built-in switch, SRTP - channels (Producer and Consumer); EGD, Modbus TCP Client/Server and Web Diagnostics Support
Total Number of Racks	8	8	8
Communications Option Modules	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP Client/Server	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP Client/Server	Serial-SNP, SNPX, RTU and CCM, LAN-Genius, Ethernet SRTP and Ethernet Modbus TCP Client/Server
Field Busses/Device Networks	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN	Ethernet, Genius, Profibus-DP, DeviceNet, Interbus-S, CsCAN
Software Programming Support	Proficy Logic Developer - Machine Edition	Proficy Logic Developer - Machine Edition	Proficy Logic Developer -Machine Edition
Internal Power Used	1.4 Amps @ 5 VDC	1.4 Amps @ 5 VDC	1.4 Amps @ 5 VDC

Baseplates

Series 90-30 baseplates are available in 5- and 10-slot configurations to the meet the needs of your application. You can choose expansion or remote baseplates for multi-rack systems, covering distances of up to 700 feet from the CPU. GE offers standard length cables for easy installation and provides wiring information for custom applications.

	IC693CHS391	IC693CHS392	IC693CHS393	IC693CHS397	IC693CHS398	IC693CHS399
Product Name	**10-slot CPU Baseplate (Model 331 and above)**	**10-slot Expansion Baseplate (Model 331 and above)**	**10-slot Remote Baseplate (Model 331 and above)**	**5-slot CPU Baseplate (Model 331 and above)**	**5-slot Expansion Baseplate (Model 331 and above)**	**5-slot Remote Baseplate (Model 331 and above)**
Lifecycle Status	Active	Active	Active	Active	Active	Active
Module Type	CPU I/O Base	Expansion I/O Base	Expansion I/O Base	CPU I/O Base	Expansion I/O Base	Expansion I/O Base
Baseplate Option	Main (With CPU Slot)	Expansion	Expansion	Main (With CPU Slot)	Expansion	Expansion
Distance	N/A	Up to 50 feet	Up to 700 feet	N/A	Up to 50 feet	Up to 700 feet
Number of Slots	10	10	10	5	5	5
Dimension (W x H x D) in. (mm)	17.44 x 5.12 x 5.59 (443 x 130 x 142)	17.44 x 5.12 x 5.59 (443 x 130 x 142)	17.44 x 5.12 x 5.59 (443 x 130 x 142)	10.43 x 5.12 x 5.59 (245 x 130 x 142)	10.43 x 5.12 x 5.59 (245 x 130 x 142)	10.43 x 5.12 x 5.59 (245 x 130 x 142)
Internal Power Used	420 mA @ 5 VDC	150 mA @ 5 VDC	460 mA @ 5 VDC	270 mA @ 5 VDC	170 mA @ 5 VDC	480 mA @ 5 VDC

Power Supplies

The Series 90-30 power supply modules simply snap in just like I/O, and they work with any model CPU. Each version provides auto-ranging so there is no need to set jumpers for different incoming power levels, and they are current limiting so a direct short will shut the power supply down to avoid damage to the hardware. Series 90-30 power supplies are tied into the performance of the CPU for simplex, fail-safe, and fault tolerance. Advanced diagnostics and built-in smart switch fusing are among the other performance and safety features.

	IC693PWR321	IC693PWR330	IC693PWR331	IC693PWR332
Product Name	**Power Supply, 120/240 VAC, 125 VDC**	**Power Supply, 120/240 VAC, 125 VDC**	**Power Supply, 24 VDC**	**Power Supply, 12 VDC**
Lifecycle Status	Active	Active	Active	Active
Module Type	Power Supply	Power Supply	Power Supply	Power Supply
Power Source	100-240 VAC or 125 VDC	100-240 VAC or 125 VDC	24 VDC	12 VDC
High Capacity	No	Yes	Yes	Yes
Output Source	30 watts total; 15 watts 5 V; 15 watts 24 V relay; 20 watts 24 V isolated	30 watts total; 30 watts 5 V; 15 watts 24 V relay; 20 watts 24 V isolated	30 watts total; 30 watts 5 V; 15 watts 24 V relay; 20 watts 24 V isolated	30 watts total; 30 watts 5 V; 15 watts 24 V relay; 20 watts 24 V isolated
Number of Redundant Power Supplies Supported	N/A	N/A	N/A	N/A
Cable Length to Redundant Power Supply Adapter	N/A	N/A	N/A	N/A

Power Supplies

The Series 90-30 power supply modules simply snap in just like I/O, and they work with any model CPU. Each version provides auto-ranging so there is no need to set jumpers for different incoming power levels, and they are current limiting so a direct short will shut the power supply down to avoid damage to the hardware. Series 90-30 power supplies are tied into the performance of the CPU for simplex, fail-safe, and fault tolerance. Advanced diagnostics and built-in smart switch fusing are among the other performance and safety features.

	IC693PWR328
Product Name	**Power Supply, 48 VDC**
Lifecycle Status	Active
Module Type	Power Supply
Power Source	48 VDC
High Capacity	No
Output Source	30 watts total; 15 watts 5 V; 15 watts 24 V relay; 20 watts 24 V isolated
Number of Redundant Power Supplies Supported	N/A
Cable Length to Redundant Power Supply Adapter	N/A

Discrete I/O Modules (Input)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693ACC300	IC693MDL230	IC693MDL250	IC693MDL231	IC693MDL240
Product Name	**DC Voltage Input Simulator, 8/16 Points**	**AC Voltage Input Module, 120 VAC Isolated, 8 Point Input**	**AC Voltage Input Module, 120 VAC Isolated, 16 Point Input**	**AC Voltage Input Module, 240 VAC Isolated, 8 Point Input**	**AC Voltage Input Module, 120 VAC, 16 Point Input**
Lifecycle Status	Active	Active	Active	Active	Active
Module Type	Input Simulator	Discrete Input	Discrete Input	Discrete Input	Discrete Input
Power Type	DC	AC	AC	AC	AC
Input Voltage Range	N/A	0-132 VAC	0-132 VAC	0-264 VAC	0-132 VAC
Input Current (mA)	N/A	14.5	14.5	15	12
Number of points	16	8	16	8	16
Response Time (ms)	20 on/30 off	30 on/45 off	30 on/45 off	30 on/45 off	30 on/45 off
Trigger Voltage	N/A	74-132	74-132	148-264	74-132
Points per Common	16	1	1	1	16
Connector Type	Toggle Switches	Terminal Block (20 screws), included with module.	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	120 mA @ 5 VDC	60 mA @ 5 VDC	60 mA @ 5 VDC	60 mA @ 5 VDC	90 mA @ 5 VDC

Discrete I/O Modules (Input)

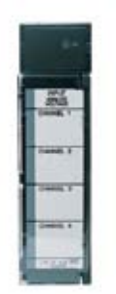
Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL260	IC693MDL241	IC693MDL632	IC693MDL634	IC693MDL645
Product Name	**AC Voltage Input Module, 120 VAC, 32 Point Input**	**AC/DC Voltage Input Module, 24 VAC/VDC**	**DC Voltage Input Module, 125 VDC Pos/Neg Logic, 8 Point Input**	**DC Voltage Input Module, 24 VDC Pos/Neg Logic, 8 Point Input**	**DC Voltage Input Module, 24 VDC Pos/Neg Logic, 16 Point Input**
Lifecycle Status	Active	Active	Active	Active	Active
Module Type	Discrete Input	Discrete Input	Discrete Input	Discrete Input	Discrete Input
Power Type	AC	Mixed	DC	DC	DC
Input Voltage Range	0-132 VAC	0-30 VDC	0-150 VDC	0-30 VDC	0-30 VDC
Input Current (mA)	12	7	4.5	7	7
Number of points	32	16	8	8	16
Response Time (ms)	30 on/45 off	12 on/28 off	7 on/7 off	7 on/7 off	7 on/7 off
Trigger Voltage	74-132	11.5-30	90-150	11.5-30	11.5-30
Points per Common	32	16	4	8	16
Connector Type	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	90 mA @ 5 VDC	80 mA @ 5 VDC; 125 mA @ 24 VDC Isolated	40 mA @ 5 VDC	45 mA @ 5 VDC; 62 mA @ 24 VDC Isolated	80 mA @ 5 VDC; 125 mA @ 24 VDC Isolated

Discrete I/O Modules (Input)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL646	IC693MDL648	IC693MDL654	IC693MDL655	IC693MDL660
Product Name	**DC Voltage Input Module, 24 VDC Pos/Neg Logic, FAST, 16 Point Input**	**DC Voltage Input Module, 48 VDC Pos/Neg Logic, FAST, 16 Point Input**	**DC Voltage Input Module, 5/12 VDC (TTL) Pos/Neg Logic, 32 Point Input**	**DC Voltage Input Module, 24 VDC Pos/Neg Logic, 32 Point Input**	**DC Voltage Input Module, 24 VDC Pos/Neg Logic, 32 Point Input**
Lifecycle Status	Active	Active	Active	Active	Active
Module Type	Discrete Input	Discrete Input	Discrete Input	Discrete Input	Discrete Input
Power Type	DC	DC	DC	DC	DC
Input Voltage Range	0-30 VDC	0-60 VDC	0-15 VDC	0-30 VDC	0-30 VDC
Input Current (mA)	7	4.2	3.0 @ 5 V, 8.5 @ 12 V	7	7
Number of points	16	16	32	32	32
Response Time (ms)	1 on/1 off	1 on/1 off	1 on/1 off	2 on/2 off	0.5ms, 1.0ms, 2.0ms, 5ms, 10ms, 50ms and 100ms, selectable per module. On and off.
Trigger Voltage	11.5-30	34 - 60	4.2-15	11.5-30	11.5-30
Points per Common	16	16	8	8	8
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Fujitsu Connector	Fujitsu Connector	IC694TBBx32 or IC694TBSx32. Sold Separately.
Internal Power Used	80 mA @ 5 VDC; 125 mA @ 24 VDC Isolated	80 mA @ 5 VDC; 125 mA @ 24 VDC Isolated	5 VDC - 195 mA @ 5 VDC; 12 VDC - 440 mA @ 5 VDC	195 mA @ 5 VDC	300 mA @ 5 VDC



Analog I/O Modules (Input)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	IC693ALG220	IC693ALG221	IC693ALG222	IC693ALG223
Product Name	**Analog Input, Voltage, 4 Channel**	**Analog Input, Current, 4 Channel**	**Analog Input, Voltage, High Density (16 Channel)**	**Analog Input, Current, High Density (16 Channel)**
Lifecycle Status	Active	Active	Active	Active
Module Type	Analog Input	Analog Input	Analog Input	Analog Input
Isolation	1500 volts RMS field to logic side	1500 volts RMS field to logic side	1500 volts RMS field to logic side	1500 volts RMS field to logic side
Range	-10 V to +10 V	4-20 mA, 0-20 mA	-10 V to +10 V, 0 to 10 V	0-20 mA, 4-20 mA
Number of Channels	4	4	16	16
Update Rate	4 ms all channels	2 ms all channels	13 ms all channels	13 ms all channels
Resolution	12 bit; 5 mV/20 µA/bit	12 bit; 0-20 mA, 5 µA/bit; 4-20 mA, 4 µA/bit	12 bit; ±10 V, 5 mV/20 µA/bit; 0-10 V, 5 mV/20 µA/bit	12 bit; 0-20 mA, 5 µA/bit; 4-20 mA, 4 µA/bit; 4-20 mA Enhanced, 5µA/bit
Accuracy	±10 mV/40 µA at 25ºC (77ºF)	0.1 % full scale	0.25% at 25ºC (77ºF)	0.25% at 25ºC (77ºF)
Input Impedance	>9 Megohms	250 ohms	250 ohms	250 ohms
Input Filter Response	17 Hz	325 Hz	200 Hz	200 Hz
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	27 mA @ 5 VDC; 98 mA 24 VDC Isolated	25 mA @ 5 VDC; 100 mA @ 24 VDC Isolated	112 mA @ 5 VDC; 4150 mA -User Supplied 24 VDC	120 mA @ 5 VDC; 65 mA-User Supplied 24 VDC

Analog I/O Modules (Input)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	HE693ADC410	HE693ADC420
Product Name	**Isolated Analog Input Module, Voltage, 1500 VAC, Isolation**	**Isolated Analog Input Module, Current, 1500 VAC, Isolation**
Lifecycle Status	Active	Active
Module Type	Analog Input	Analog Input
Range	±10 V	4-20 mA, ±20 mA
Number of Channels	4	4
Channel-to-Channel Isolation	1500 VAC (RMS), ±2000 VDC	1500 VAC (RMS), ±2000 VDC
Input Impedance	1 Megohm	100 ohms
A/D Type, Resolution	Integrating, 18 bits	Integrating, 18 bits
Useable Resolution	13 bits plus sign	13 bits plus sign
I/O Required	4 %AI, 4 %AQ, 16 %I	8 %AI, 8 %AQ, 16 %I
Sample Rate	45 channels/second	45 channels/second
Analog Filtering	1 KHz, 3 pole Bessel	1 KHz, 3 pole Bessel
Digital Filtering	1-128 samples/update	1-128 samples/update
Maximum Error	.05% full scale	.05% full scale
Common Mode Range	1500 VAC (RMS), ±2000 VDC	1500 VAC (RMS), ±2000 VDC
Common Mode Rejection	>100 dB	>100 dB
Power Consumption at Steady State, Maximum	0.7 W @ 5 V, 1.2 W @ 24 V	0.7 W @ 5 V, 1.2 W @ 24 V
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	140 mA @ 5 VDC ; 50 mA @ 24 VDC Relay	140 mA @ 5 VDC; 50 mA @ 24 VDC Relay

Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL310	IC693MDL330	IC693MDL340	IC693MDL390	IC693MDL350	IC693MDL730
Product Name	**AC Voltage Output Module, 120 VAC, 0.5 A, 12 Point Output**	**AC Voltage Output Module, 120/240 VAC, 1 A, 8 Point Output**	**AC Voltage Output Module, 120 VAC, 0.5 A, 16 Point Output**	**AC Voltage Output Module, 120/240 VAC Isolated, 2 A, 5 Point Output**	**AC Voltage Output Module, 120 VAC Isolated, 2 A, 16 Point Output**	**DC Voltage Output Module, 12/24 VDC Positive Logic, 2 A, 8 Point Output**
Lifecycle Status	Discontinued	Active	Active	Active	Active	Active
Power Type	AC	AC	AC	AC	AC	DC
Output Voltage Range	85-132 VAC	85-264 VAC	85-132 VAC	85-264 VAC	74-264 VAC	12-24 VDC
Number of Points	12	8	16	5	16	8
Isolation	N/A	N/A	N/A	Yes	Yes	N/A
Load Current per Point	0.5 A	1.0 A	0.5 A	2.0 A	Per Point 2A max. @ 30°C & 1A max. @ 60°C (Linear derating)	2.0 A
Response Time (ms)	1 on 1/2 cy off	1 on 1/2 cy off	1 on 1/2 cy off	1 on 1/2 cy off	1 on 1/2 cy off	2 on/2 off
Output Type	Triac	Triac	Triac	Triac	Triac	Transistor
Polarity	N/A	N/A	N/A	N/A	N/A	Positive
Points per Common	6	4	4	1	1	8
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.
Internal Power Used	210 mA @ 5 VDC	160 mA @ 5 VDC	315 mA @ 5 VDC	110 mA @ 5 VDC	110 mA @ 5 VDC	55 mA @ 5 VDC

Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL731	IC693MDL732	IC693MDL733	IC693MDL734	IC693MDL740	IC693MDL741
Product Name	**DC Voltage Output Module, 12/24 VDC Negative Logic, 2 A, 8 Point Output**	**DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 8 Point Output**	**DC Voltage Output Module, 12/24 VDC Negative Logic, 0.5 A, 8 Point Output**	**DC Voltage Output Module, 125 VDC Pos/Neg Logic, 6 Point Output**	**DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 16 Point Output**	**DC Voltage Output Module, 12/24 VDC Negative Logic, 0.5 A, 16 Point Output**
Lifecycle Status	Active	Active	Active	Active	Active	Active
Power Type	DC	DC	DC	DC	DC	DC
Output Voltage Range	12-24 VDC	12-24 VDC	12-24 VDC	11-150 VDC	12-24 VDC	12-24 VDC
Number of Points	8	8	8	6	16	16
Isolation	N/A	N/A	N/A	N/A	N/A	N/A
Load Current per Point	2.0 A	0.5 A	0.5 A	1.0 A	0.5 A	0.5 A
Response Time (ms)	2 on/2 off	2 on/2 off	2 on/2 off	7 on/5 off	2 on/2 off	2 on/2 off
Output Type	Transistor	Transistor	Transistor	Transistor	Transistor	Transistor
Polarity	Negative	Positive	Negative	Positive/Negative	Positive	Negative
Points per Common	8	8	8	1	8	8
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	55 mA @ 5 VDC	50 mA @ 5 VDC	55 mA @ 5 VDC	90 mA @ 5 VDC	110 mA @ 5 VDC	110 mA @ 5 VDC

Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL742	IC693MDL748	IC693MDL752	IC693MDL753	IC693MDL754	IC693MDL930
Product Name	**DC Voltage Output Module, 12/24 VDC Positive Logic ESCP, 1 A, 16 Point Output**	**DC Voltage Output Module, 48/24 VDC Positive Logic, 0.5 A, 8 Point Output**	**DC Voltage Output Module, 5/24 VDC (TTL) Negative Logic, 0.5 A, 32 Point Output**	**DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5 A, 32 Point Output**	**DC Voltage Output Module, 12/24 VDC Positive Logic, 0.75 A, with ESCP protection, 32 Point Output**	**AC/DC Voltage Output Module, Relay, N.O., 4 A Isolated, 8 Point Output**
Lifecycle Status	Active	Active	Active	Active	Active	Active
Power Type	DC	DC	DC	DC	DC	Mixed
Output Voltage Range	12-24 VDC	24-48 VDC	5, 12-24 VDC	12-24 VDC	12-24 VDC	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63Hz), 120/240 VAC nominal
Number of Points	16	8	32	32	32	8
Isolation	N/A	N/A	N/A	N/A	N/A	Yes
Load Current per Point	1.0 A	0.5 A	0.5 A	0.5 A	0.75 A with ESCP protection	4.0 A
Response Time (ms)	2 on/2 off	2 on/2 off	0.5 on/0.5 off	0.5 on/0.5 off	0.5 on/0.5 off	15 on/15 off
Output Type	Transistor	Transistor	Transistor	Transistor	Transistor	Relay
Polarity	Positive	Positive	Negative	Positive	Positive	N/A
Points per Common	8	8	8	8	16	1
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Fujitsu Connector	Fujitsu Connector	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.
Internal Power Used	130 mA @ 5 VDC	110 mA @ 5 VDC	260 mA @ 5 VDC	260 mA @ 5 VDC	300 mA @ 5 VDC	6 mA @ 5 VDC; 70 mA @ 24 VDC Relay

Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC693MDL916	IC693MDL931	IC693MDL940	IC693MAR590	IC693MDR390
Product Name	**AC/DC Voltage Output Module, Relay, N.O., 4 A Isolated, 16 Point Output**	**AC/DC Voltage Output Module, Relay, N.C. and Form C, 8 A Isolated, 8 Point Out**	**AC/DC Voltage Output Module, Relay, N.O., 2 A, 16 Point Output**	**AC/DC Voltage I/O Module, AC In/Relay Out N.O.**	**AC/DC Voltage Output Module, 24 VDC Input, Relay Output, 8 In/8 Out**
Lifecycle Status	Active	Active	Active	Active	Active
Power Type	Mixed	Mixed	Mixed	Mixed	Mixed
Output Voltage Range	5 – 125 VDC, 5/24/125 VDC nominal 5 – 250 VAC (47 to 63 Hz), 120-240 VAC nominal	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63Hz), 120/240 VAC nominal	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63Hz), 120/240 VAC nominal	5-250 VAC/5-30 VDC	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63Hz), 120/240 VAC nominal
Number of Points	16	8	16	8	8
Isolation	Yes	Yes	N/A	N/A	N/A
Load Current per Point	4.0 A	8.0 A	2.0 A	2.0 A	2.0 A
Response Time (ms)	10ms maximum (At nominal voltage excluding contact bounce)	15 on/15 off	15 on/15 off	30 on/45 off	1 on/1 off
Output Type	Relay	Relay	Relay	Relay	Relay
Polarity	N/A	N/A	N/A	N/A	N/A
Points per Common	1	1	4	8	8
Connector Type	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	300 mA @ 5 VDC from backplane maximum	6 mA @ 5 VDC; 110 mA @ 24 VDC Relay	7 mA @ 5 VDC; 135 mA @ 24 VDC Relay	80 mA @ 5 VDC; 70 mA @ 24 VDC Relay	80 mA @ 5 VDC; 70 mA @ 24 VDC Relay

Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	HE693RLY100	HE693RLY110
Product Name	**DC Voltage Output Module, AC In/Relay Out (isolated)**	**DC Voltage Output Module, AC In/Relay Out (fused)**
Lifecycle Status	Active	Active
Power Type	Mixed	Mixed
Output Voltage Range	12-120 VAC, 12-30 VDC	12-120 VAC, 12-30 VDC
Number of Points	8	8
Isolation	Yes	No
Load Current per Point	8.0 A	8.0 A
Response Time (ms)	11 on/11 off	11 on/11 off
Output Type	Relay	Relay
Polarity	N/A	N/A
Points per Common	1	1
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	180 mA @ 5 VDC; 200 mA @ 24 VDC Relay	180 mA @ 5 VDC; 200 mA @ 24 VDC Relay

Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	IC693ALG390	IC693ALG391	IC693ALG392	IC693ALG442
Product Name	**Analog Output, Voltage, 2 Channel**	**Analog Output, Current/Voltage, 2 Channel**	**Analog Current/Voltage Output, 8 Channel**	**Analog Current/Voltage Combination 4 Channel In/2 Channel Out**
Lifecycle Status	Active	Active	Active	Active
Module Type	Analog Output	Analog Output	Analog Output	Analog Input/Output
Isolation	1500 volts RMS field to logic side	1500 volts RMS field to logic side	1500 volts RMS field to logic side	1500 volts RMS field to logic side
Range	-10 V to +10 V, 4-20 mA	1-5 V and 0-5 V, 0-20 mA, 4-20 mA	0 V to +10 V, -10 V to +10 V, 0-20 mA, 4-20 mA	0 V to +10 V, -10 V to +10 V, 0-20 mA, 4-20 mA
Number of Channels	2	2	8	4 in/2 out
Channel-to-Channel Isolation	N/A	N/A	N/A	N/A
Diagnostics	N/A	N/A	Open Wire	N/A
Update Rate	5 ms all channels	5 ms all channels	8 ms all channels	8 ms all channels In / 4 ms all channels Out
Resolution	12 bit; 2.5 mV/bit	12 bit; 0-20 mA, 5µA/bit	16 bit; 0.312 mV/bit	(Input)12 bit; 0 V to 10 V, 2.5 mV/bit; -10 V to +10 V, 5 mV/bit; 0-20 mA, 4-20 mA 5µA/bit (Output) 16 bit; 0.312 mV/bit; 4-20 mA 0.5 µA/bit; 0-20 mA 0.625 µA/bit
Accuracy	±5 mV at 25ºC (77ºF)	0-20 mA, ±8 µA at 25ºC (77ºF); 0-20 mA, 4-20 mA ±0.1% at 25ºC (77ºF)	0-20 mA, 4-20 mA ±0.1% at 25ºC (77ºF); 0-10 V, -10F + 10 V ±0.25 at 25ºC (77ºF)	(Input) 0.25 % at 25ºC (77ºF) (Output) 0-20 mA, 4-20 mA ±0.1% at 25ºC (77ºF)
Maximum Output Load	5 mA (2 K ohms)	5 mA (2 K ohms)	5 mA (2 K ohms)	5 mA (2 K ohms); 850 ohms
Output Load Capacitance	2000 pF	2000 pF, Inductance 1H	2000 pF, Inductance 1H	2000 pF, Inductance 1H
Power Consumption at Steady State, Maximum	N/A	N/A	N/A	N/A
User Supplied Loop Voltage	N/A	N/A	N/A	N/A
Maximum Load (ohms)	N/A	N/A	N/A	N/A
Maximum Linearity Error	N/A	N/A	N/A	N/A
Common Mode Isolation	N/A	N/A	N/A	N/A
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	32 mA @ 5 VDC; 120 mA @ 24 VDC Isolated	30 mA @ 5 VDC; 215 mA 24 VDC Isolated	110 mA @ 5 VDC; 315 mA -User Supplied 24 VDC	95 mA @ 5 VDC; 129 mA 24 VDC Isolated

Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	HE693DAC410	HE693DAC420
Product Name	**Isolated Analog Output Module, Voltage**	**Isolated Analog Output Module, Current**
Lifecycle Status	Active	Active
Module Type	Analog Output	Analog Output
Isolation	N/A	N/A
Range	±10 V	4-20 mA or 0-20 mA
Number of Channels	4	4
Channel-to-Channel Isolation	1500 VAC (RMS),±2000 VDC	1500 VAC (RMS),±2000 VDC
Diagnostics	N/A	N/A
Update Rate	N/A	N/A
Resolution	13 bits plus sign, 1.2 5mV	13 bits plus sign, 2.0 µA (4-20 mA); 2.5 µA (±20 mA)
Accuracy	N/A	N/A
Maximum Output Load	N/A	N/A
Output Load Capacitance	N/A	N/A
Power Consumption at Steady State, Maximum	0.75 W @ 5 V; 3.6 W @ 24 V	0.75 W @ 5 V; 3.6 W @ 24 V
User Supplied Loop Voltage	N/A	2-32 VDC
Maximum Load (ohms)	>/= 2 Kohms	</= 1.1 Kohms @ 24 V loop voltage
Maximum Linearity Error	0.02% full scale	0.02% full scale
Common Mode Isolation	1500 VAC (RMS),±2000 VDC	1500 VAC (RMS), ±2000 VDC
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	500 mA @ 5 VDC; 150 mA @ 24 VDC Relay	150 mA @ 5 VDC; 110 mA @ 24 VDC Relay

Millivolt I/O Modules

The Millivolt Input Modules allow millivolt level signals, such as bridged strain gages (load cells) to be directly connected to the PLC without external signal processing (transducers, transmitters, etc.) All analog and digital processing of the signal is performed on the module.

	HE693ADC409
Product Name	**Analog I/O Module, Millivolt Input**
Lifecycle Status	Active
Module Type	Millivolt Input
Input Voltage Range	±25 mV, ±50 mV and ±100 mV
Number of Channels	4
Resolution	3 µV, 6µV, 9µV (respectively)
Accuracy	±0.5%
Input Impedance	>20 Mohms
A/D Conversion Type	Integrating
A/D Conversion Time	35 Channels/second
Strain Gages Supported	Bridged (load cells)
Maximum Normal Voltage Input	100 mV
Maximum Voltage Input	±35 V
Connector Type	Terminal Block (20 screws), included with module.
Internal Power Used	100 mA @ 5 VDC

RTD I/O Modules

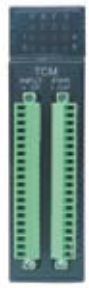
The RTD Input Modules provide six RTD inputs that allow the direct connection of 3-wire RTD temperature sensors without using external signal processing (transducers, transmitters, etc.). All analog and digital processing of the RTD signal is performed on the module.

	HE693RTD600	HE693RTD601	HE693RTD660	HE693RTD665	HE693RTD666
Product Name	**RTD Input Module, Low Resolution**	**RTD Input Module, High Resolution**	**RTD Input Module, Isolated**	**RTD Input Module, Isolated**	**RTD Input Module, Isolated**
Lifecycle Status	Active	Active	Active	Discontinued	Discontinued
Module Type	RTD Input	RTD Input	RTD Input	RTD Input	RTD Input
Number of Channels	6	6	6	6	6
RTD Types Supported	3-wire, Pt-100E, Pt-100C, Pt-100Z, Pt-1000, Cu-10, Cu-50, PT-100, Cu-53, Cu-100, Ni-120, TD5R, TD5R, Pt-90 (MIL-7990)	3-wire, Pt-100E, Pt-100C, Pt-100Z, Pt-1000, Cu-10, Cu-50, PT-100, Cu-53, Cu-100, Ni-120, TD5R, TD5R, Pt-90 (MIL-7990)	3 wire, Pt-100E, Pt-100C, Ni-120, Cu-10, Pt-1000, TD5R Si	3 wire, Pt-100E, Pt-100C, Ni-120, Cu-10, Pt-1000, TD5R Si	3 wire, Pt-100E, Pt-100C, Ni-120, Cu-10, Pt-1000, TD5R Si
Channel-to-Channel Isolation	N/A	N/A	5 VAC	5 VAC	5 VAC
Notch Filter	N/A	N/A	None	50 Hz	60 Hz
Resolution	0.5°C or 0.5°F	0.125°C , 0.1°C, or 0.1°F	0.05°C, 0.05°F, 0.1°C, 0.1°F, 0.5°C or 0.5°F	0.05°C, 0.05°F, 0.1°C, 0.1°F, 0.5°C or 0.5°F	0.05°C, 0.05°F, 0.1°C, 0.1°F, 0.5°C or 0.5°F
Accuracy	±0.5°C, typical	±0.5°C, typical	±0.3°C	±0.3°C	±0.3°C
Input Impedance	>1000 Megohms	>1000 Megohms	>1000 Megohms	>1000 Megohms	>1000 Megohms
Fault Protection	Zener Diode Clamp	Zener Diode Clamp	Suppression Diode	Suppression Diode	Suppression Diode
Update Time	50 Channels/second	50 Channels/second	50 Channels/second	50 Channels/second	50 Channels/second
A/D Conversion Type	18 bit, integrating	18 bit, integrating	18 bit, integrating	18 bit, integrating	18 bit, integrating
Average RTD Current, Pt-100	330 microamps	330 microamps	330 microamps	330 microamps	330 microamps
Channel-to-Channel Tracking	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C
Channel-to-Bus Isolation	N/A	N/A	1500 VAC	1500 VAC	1500 VAC
RTD Short	N/A	N/A	Indefinite without damage	Indefinite without damage	Indefinite without damage
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	70 mA @ 5 VDC	70 mA @ 5 VDC	200 mA @ 5 VDC	200 mA @ 5 VDC	200 mA @ 5 VDC

Strain Gage I/O Modules

The Millivolt Input Modules allow millivolt level signals, such as bridged strain gages (load cells) to be directly connected to the PLC without external signal processing (transducers, transmitters, etc.) All analog and digital processing of the signal is performed on the module.

	HE693STG883	HE693STG884
Product Name	**Analog I/O Module, Strain Gage**	**Analog I/O Module, Strain Gage**
Lifecycle Status	Active	Active
Module Type	Strain Gage Input	Strain Gage Input
Input Voltage Range	±20 mV, ±25 mV and ±30mV	±25 mV, ±50 mV and ±100mV
Number of Channels	8	8
Resolution	0.6 µV, 0.8 µV, 0.9 µV (respectively)	0.8 µV, 1.6 µV, 3.2 µV (respectively)
Accuracy	±0.3%	±0.3 %
Input Impedance	>1000 Mohms	>1000 Mohms
A/D Conversion Type	Integrating	Integrating
A/D Conversion Time	35 Channels/second	35 Channels/second
Strain Gages Supported	Bridged (load cells)	Bridged (load cells)
Maximum Normal Voltage Input	100 mV	100 mV
Maximum Voltage Input	±35 V	±35 V
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	60 mA @ 5 VDC; 30 mA @ 24 VDC Relay	60 mA @ 5 VDC; 30 mA @ 24 VDC Relay



Temperature Control Modules

The Temperature Control Module (TCM), is a high performance control module providing eight channels of thermocouple input and eight channels of control output in a single Series 90-30 module. Each channel can operate in closed or open loop mode relieving the PLC of providing the temperature control functions. The module also supports Autotuning.

	IC693TCM302	IC693TCM303
Product Name	**Temperature Control Module, (8) T/C, (1) RTD and (8) 24 VDC Output**	**Temperature Control Module, Extended Range, 8 T/C, 1RTD and 8 24 VDC Output**
Lifecycle Status	Mature	Mature
Module Type	Thermocouple Input	Thermocouple Input
Thermocouples	8 channels (Type J, K or L); J=0-450ºC; K=0 -600ºC; L=0-450ºC; 1 internal/external compensation channel, 12-bits or 0.2ºC resolution, 100 ms/ channel update, ±1ºC accuracy with automatic calibration	8 channels (Type J, K or L); J=0-600ºC; K=0 -1050ºC; L=0-600ºC; 1 internal/external compensation channel, 12-bits or 0.2ºC resolution, 100 ms/ channel update, ±1ºC accuracy with automatic calibration
RTD Input	1 channel with Open/Short Circuit Detection; Type: Pt-100 (µ=0.00392) for temperature compensation	1 channel with Open/Short Circuit Detection; Type: Pt-100 (µ=0.00392) for temperature compensation
Temperature Range	J=0-600ºC, K=0-1050ºC, L=0-600ºC	J=0-450ºC, K=0-600ºC, L=0-450ºC
Output Voltage Range	18 to 30 volts DC	18 to 30 volts DC
Load Current per point	100 mA maximum sourcing	100 mA maximum sourcing
Number of Channels	8 T/C In / 8 DC Out	8 T/C In / 8 DC Out
Diagnostics	Open thermocouple and reverse connection detection capability; Detection and indication of out-of-tolerance temperature readings	Open thermocouple and reverse connection detection capability; Detection and indication of out-of-tolerance temperature readings
Connector Type	Two 20 pin connectors (screw type)	Two 20 pin connectors (screw type)
Internal Power Used	150 mA @ 5 VDC	150 mA @ 5 VDC

Thermocouple I/O Modules

The Thermocouple Input Modules allow thermocouple temperature sensors to be directly connected to the PLC with external signal processing (transducers, transmitters, etc.). The module performs all analog and digital processing of the thermocouple signal. The enhanced thermocouple input modules add isolation or high-resolution. On these modules, each channel can be configured for a specific type of sensor wire. An autodetect external AD592 cold junction compensation feature is also available.

	HE693THM166	HE693THM409	HE693THM449
Product Name	**Analog I/O Thermocouple Input Module**	**Analog I/O Thermocouple Input Module**	**Analog I/O Thermocouple Input Module**
Lifecycle Status	Active	Active	Active
Module Type	Thermocouple Input	Thermocouple Input	Thermocouple Input
Range	J, K, N, T, E, R, S, B, C, X	J, K, N, T, E, R, S	J, K, N, T, E, R, S
Number of Channels	16	4	4
Channel-to-Channel Isolation	N/A	N/A	N/A
Notch Filter	N/A	N/A	N/A
Open Circuit Alarm	Yes	No	Yes
Resolution	0.5°C or 0.5°F	0.5°C or 0.5°F	0.5°C or 0.5°F
Accuracy	±0.5°C, typical (J,K,N,T)	±0.5°C, typical (J,K,N,T)	±0.5°C, typical (J,K,N,T)
A/D Conversion Type	Integrating	Integrating	Integrating
A/D Conversion Time	40 Channels/second	40 Channels/second	40 Channels/second
Open Circuit Detection	Yes	Yes	Yes
Setpoint Alarm	N/A	N/A	N/A
Diagnostics	Open Circuit Detection	Open Circuit Detection	Open Circuit Detection
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	80 mA @ 5 VDC; 30 mA @ 24 VDC Relay	80 mA @ 5 VDC; 60 mA @ 24 VDC Relay	80 mA @ 5 VDC; 60 mA @ 24 VDC Relay

Thermocouple I/O Modules

The Thermocouple Input Modules allow thermocouple temperature sensors to be directly connected to the PLC with external signal processing (transducers, transmitters, etc.). The module performs all analog and digital processing of the thermocouple signal. The enhanced thermocouple input modules add isolation or high-resolution. On these modules, each channel can be configured for a specific type of sensor wire. An autodetect external AD592 cold junction compensation feature is also available.

	HE693THM809	HE693THM884	HE693THM888	HE693THM889
Product Name	**Analog I/O Thermocouple Input Module**	**Analog I/O Thermocouple Input Module (Enhanced)**	**Analog I/O Thermocouple Input Module (Enhanced)**	**Analog I/O Thermocouple Input Module**
Lifecycle Status	Active	Active	Active	Active
Module Type	Thermocouple Input	Thermocouple Input	Thermocouple Input	Thermocouple Input
Range	J, K, N, T, E, R, S	J, K, N, T, E, R, S, B, C	J, K, N, T, E, R, S, B, C	J, K, N, T, E, R, S
Number of Channels	8	8	8	8
Channel-to-Channel Isolation	N/A	N/A	N/A	N/A
Notch Filter	N/A	None	60 Hz	N/A
Open Circuit Alarm	No	Yes	Yes	Yes
Resolution	0.5°C or 0.5°F	N/A	N/A	0.5°C or 0.5°F
Accuracy	±0.5°C, typical (J,K,N,T)	N/A	N/A	±0.5°C, typical (J,K,N,T)
A/D Conversion Type	Integrating	N/A	N/A	Integrating
A/D Conversion Time	40 Channels/second	N/A	N/A	40 Channels/second
Open Circuit Detection	Yes	Yes	Yes	Yes
Setpoint Alarm	N/A	Yes	Yes	N/A
Diagnostics	Open Circuit Detection	Open Circuit Detection and Alarms	Open Circuit Detection and Alarms	Open Circuit Detection
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	80 mA @ 5 VDC; 60 mA @ 24 VDC Relay	100 mA @ 5 VDC; 60 mA @ 24 VDC Relay	100 mA @ 5 VDC; 60 mA @ 24 VDC Relay	80 mA @ 5 VDC; 60 mA @ 24 VDC Relay

Networks and Distributed I/O Systems

The Series 90-30 features a variety of communications options for distributed control and/or I/O. Choose from Ethernet EGD, Profibus-DP, Genius, DeviceNet, Interbus-S, Series 90 Protocol (SNP) and RTU modules. These communication modules are easy to install and quick to configure.

	IC693PBM200	IC693PBS201	IC693BEM331
Product Name	**Communications Module, Profibus-DP Module (Master)**	**Communications Module, Profibus-DP Module (Slave)**	**Series 90-30 I/O Bus Module, Genius Bus Controller**
Lifecycle Status	Active	Active	Active
Module Type	Profibus-DP Master	Profibus-DP Slave	Genius Bus Controller
Protocol Support	Profibus DP	Profibus DP	Genius
Entity Type	Master	Slave	Master
Bus Speed	12Mbaud	12Mbaud	153.6Kbaud
Network Distance	Baud Rate Dependent. Supports all standard data rates (9.6 kBit/s, 19.2 kBit/s, 93.75 kBit/s, 187.5 kBit/s, 500 kBit/s, 1.5 MBit/s, 3 MBit/s, 6 MBit/s and 12 MBit/s)	Baud Rate Dependent. Supports all standard data rates (9.6 kBit/s, 19.2 kBit/s, 93.75 kBit/s, 187.5 kBit/s, 500 kBit/s, 1.5 MBit/s, 3 MBit/s, 6 MBit/s and 12 MBit/s)	7500 feet (2286 meters) at 38.4 Kbaud; 4500 feet (1371 meters) at 76.8 Kbaud; 3500 feet (1066 meters) at 153.6 Kbaud extended; 2000 feet (609 meters) at 153.6 Kbaud standard. Maximum length at each baud rate also depends on cable type.
Bus Diagnostics	Supported	Supported	Supported
Number of Drops Supported	125 Slaves	One	32
Message Size	244 bytes of input and 244 bytes of output for each slave. Not to exceed 3584 bytes input and 3584 bytes outputs total for the system.	244 bytes of input and 244 bytes of output	255 bytes
Internal Power Used	450 @ 5 VDC	450 @ 5 VDC	300 mA @ 5 VDC

Networks and Distributed I/O Systems

The Series 90-30 features a variety of communications options for distributed control and/or I/O. Choose from Ethernet EGD, Profibus-DP, Genius, DeviceNet, Interbus-S, Series 90 Protocol (SNP) and RTU modules. These communication modules are easy to install and quick to configure.

	IC693DNM200	IC693DNS201	IC693CMM302
Product Name	**Series 90-30 Communications Module, DeviceNet, Master**	**Series 90-30 Communications Module, DeviceNet, Slave**	**Series 90-30 Enhanced Genius Communications Module**
Lifecycle Status	Active	Active	Active
Module Type	DeviceNet Master	DeviceNet Slave	Genius Peer to Peer
Protocol Support	DeviceNet	DeviceNet	N/A
Entity Type	Master	Slave	Peer-to-Peer
Bus Speed	500Kbaud	500Kbaud	153.6Kbaud
Network Distance	500Kbaud 100 meters to 125Kbaud 500 meters. Maximum length at each baud rate also depends on cable type.	500Kbaud 100 meters to 125Kbaud 500 meters. Maximum length at each baud rate also depends on cable type.	7500 feet (2286 meters) at 38.4 Kbaud; 4500 feet (1371 meters) at 76.8 Kbaud; 3500 feet (1066 meters) at 153.6 Kbaud extended; 2000 feet (609 meters) at 153.6 Kbaud standard. Maximum length at each baud rate also depends on cable type.
Bus Diagnostics	Supported	Supported	N/A
Number of Drops Supported	64	N/A	N/A
Message Size	3972 bytes Input and 3972 bytes Output	255 bytes In and 255 bytes Out	N/A
Internal Power Used	450 @ 5 VDC	450 @ 5 VDC	300 mA @ 5 VDC

Networks and Distributed I/O Systems

The Series 90-30 features a variety of communications options for distributed control and/or I/O. Choose from Ethernet EGD, Profibus-DP, Genius, DeviceNet, Interbus-S, Series 90 Protocol (SNP) and RTU modules. These communication modules are easy to install and quick to configure

	IC693BEM320	IC693BEM321
Product Name	**Series 90-30 Communication, I/O Link Interface Module (Slave)**	**Series 90-30 Communication, I/O Link Interface Module (Master)**
Lifecycle Status	Active	Active
Module Type	I/O Link	I/O Link
Protocol Support	N/A	N/A
Entity Type	Slave	Master
Bus Speed	1.5 mHz	1.5 mHz
Network Distance	10 meters (33 feet) RS-485; 200 meters (660 feet)	10 meters (33 feet) RS-485; 200 meters (660 feet)
Bus Diagnostics	N/A	N/A
Number of Drops Supported	N/A	N/A
Message Size	N/A	N/A
Internal Power Used	205 mA @ 5 VDC	415 mA @ 5 VDC

Serial Communications Modules

The Series 90-30 features a variety of communications options for distributed control and/or I/O. Choose from Ethernet EGD, Profibus-DP, Genius, DeviceNet, Interbus-S, Series 90 Protocol (SNP) and RTU modules. These communication modules are easy to install and quick to configure.

	IC693CMM311	HE693SNP900	HE693RTM705
Product Name	**Series 90-30 Communications Control Module**	**Communications Module, SNP Slave Module from Horner Electric**	**Communications Module, Modbus RTU Master from Horner Electric**
Lifecycle Status	Discontinued	Active	Discontinued
Module Type	Serial Communications	SNP Module	Modbus RTU Master
Protocol Support	SNP/SNPX; CCM; Modbus RTU Slave	SNP Slave	Modbus Master support Report by Exception
Communication Ports	1 RS-232, 1 RS-485	RS-232, RS-232/485	RS-232, RS-232/485, modem
Backplane Compatibility	N/A	No Restrictions	Restricted to IC693CHS391 and IC693CHS397
Internal Power Used	400 mA @ 5 VDC	250 mA @ 5 VDC	375 mA @ 5 VDC

Power Measurement Modules

The Power Transducer Module (PTM) and Power Synchronization and Measurement (PSM) module measure and calculate critical data for control of electrical power systems and synchronization of power grids. Both the PTM and PSM connect to user supplied current and potential transformers, which translate power grid signals to proportionate, low-level signals for measurement and analysis. The PTM module is not intended to provide a protective relay function or be used for energy billing purposes. The PSM module provides ANSI protective relay calculations and revenue grade monitoring for a complete genset, paralleling switchgear or infrastructure management solution. Both the PTM and PSM consist of a processing module that plugs into the PLC backplane, an interface module for field wiring connections, and cables to interconnect the two modules. The PTM and PSM can be used with Wye or Delta type three-phase power or with single-phase power systems.

	IC693PTM101
Product Name	**Power Transducer Module Processing Module interface board (a panel mounted circuit board). This board interfaces between the Power Transducer module and the input transformers (current and potential), 1.0 meter Interface cable that connects the module to the Interface board.**
Lifecycle Status	Mature
Module Type	Power Transducer Modules
Input Voltage Range	10-120 VAC (nominal)
Power Measurement Configurations	Grids Circuits 1 0 0 up to 4
Current Input Range	0 to 7.5 Amps RMS (5 A RMS nominal)
Frequency Range	35Hz to 70Hz
Output Rating	N/A
Number of Outputs	0
Data	Data availability • Data calculation rate: 20ms @ 50Hz, 16.67ms @ 60Hz • Data latency: 15ms @ 50Hz, 16.67ms @ 60Hz Measured Data • RMS voltage of phase A, B, and C (in Volts x 10) • RMS currents of phase A, B, C, and Neutral (in Amperes x 1000) for each grid • DC component of measured RMS voltages (in Volts x 10) • Frequency of phase A grid 1 (in Hz x 100) • Phase angle between phase A grid 1 and phase A grid 2 (in degrees x 10) Power and Energy Data • Active and reactive power reported per phase and total in Watts, Volt-Amperes-Reactive (VAR) • Active and reactive total energy consumption in Watt-Seconds and Volt-Amperes-Reactive-Seconds (updated once per second), re-settable by the user • Total power factor • Average real and reactive power consumption (sliding 15 minute window updated once per second)
Status and Diagnostics	• Module Heartbeat (indicates module health) • Utility Phase A voltage present • Phase polarity valid • Voltage measurements valid • Current measurements valid
Internal Power Used	400 mA @ 5 VDC

Pneumatic Module

This IC693MDL760 output module provides eleven pneumatic outputs and five 24 VDC sourcing outputs. For each pneumatic output, the module contains an internal 3-way solenoid-actuated valve and an associated output fitting, which is located on the front panel. When an output is turned ON, its internal valve connects a user supplied pressure source (100 psi maximum) to the output fitting. The pressure source is connected to the fitting on the bottom of the module. When the output is turned OFF, the valve's output port is vented to atmosphere inside the module. Solenoid power is supplied from an external 24 VDC source to the "DC Outputs" connector on the front panel.

	IC693MDL760
Product Name	**Series 90-30 Solenoid Module**
Lifecycle Status	Active
Number of Points	(11) Pneumatic Outputs (5) 24 VDC Outputs
Pneumatic Outputs	11
Supply Pressure	100 PSI
Pressure Drop	25 psi max.@ 0.25 scfm
External Solenoid Power	21.6-26.4 VDC, 24 VDC nominal
ON Response Time/Off Response Time	12 ms max. ON 12 ms max. OFF
Solenoid Inrush Current	33 mA/valve @ 24 VDC
Solenoid Holding Current	13 mA/valve @ 24 VDC
Output Fitting	Threaded for 10-32 adapter, 1/16" hose barb provided
Supply Fitting	Threaded for 10-32 adapter, 1/8" hose barb provided
Load Current per Point	0.5 A @ 30 VDC per point, 2.0 A total for all five points
Response Time (ms)	0.5 on/0.5 off
Output Type	Transistor
Polarity	Positive
Internal Power Used	75 mA from 5 VDC bus (solenoid LEDs are powered from external power source)

Programmable Coprocessor Modules

GE Series 90-30's feature a wide range of Specialty Modules to meet all of your application needs. From temperature controls, high-speed counters, I/O processors, coprocessors, to PID auto-tuning modules, these Specialty Modules are designed to meet the demand for versatile industrial solutions.

	IC693PCM311	IC693PCM301	HE693ASC900
Product Name	**Series 90-30, Programmable Coprocessor Module, 640 KB (190 KB Basic Prgm)**	**Series 90-30, Programmable Coprocessor Module, 192 KB (47 KB Basic Prgm)**	**Horner ASCII Basic Module**
Lifecycle Status	Discontinued	Discontinued	Active
Module Type	Programmable Coprocessor Module	Programmable Coprocessor Module	Co-Processor ASCII Basic Module
Programming Languages	BASIC or C	BASIC or C	BASIC
Program Storage	640K of Battery Backed RAM	192K of Battery Backed RAM or EPROM option	64K EEPROM
Communication Ports	(2) One RS-232 and one RS-232/RS-485	(2) One RS-232 and one RS-232/RS-485	RS-232, RS-232/485
Backplane Compatibility	Restricted to IC693CHS391 and IC693CHS397	Restricted to IC693CHS391 and IC693CHS397	No Restrictions
Internal Power Used	400 mA @ 5 VDC	425 mA @ 5 VDC	375 mA @ 5 VDC

Motion Modules (High Speed Counting)

Motion control integrated into the Series 90-30 fosters high performance point-to-point applications. GE Motion Control modules can be flexibly applied to a variety of digital, analog, and stepper motion applications.

	IC693APU300	IC693APU305
Product Name	**Series 90-30 High Speed Counter**	**Series 90-30 I/O Processor Module**
Lifecycle Status	Active	Active
Module Type	High Speed Counter	I/O Processor Module
Count Rate	High Frequency - 80 kHz; Low Frequency - 20 Hz	30 khz (Absolute Encoder) 200 khz (A Quad B Encoder)
Input/Output Type	Positive Logic	N/A
Off State Leakage Current	10 µA per point	10 µA per point
Output Protection	3 Amp Fuse for all points	5 A Fuse for all points
Counter Operation	Type A - Up or Down-Independent Pulse-4 counters; Type B - Both Directions-A QUAD B Encoder Inputs-2 Counters; Type C - Difference Between 2 changing values-A QUAD B Encoder Inputs -1 Counter	N/A
Input Filters (Selectable)	High Frequency Filter - 2.5 µS; Low Frequency Filter - 12.5 ms	N/A
Selectable On/Off Output Presets	Each Counter has 2 present points, On and Off	N/A
Counters per Timebase	Each counter stores the number of counts that have occurred in a specified time. A timebase value measurement from 1 ms to 65535 ms is configurable.	N/A
Strobe Register	Each counter has one or more strobe registers that capture the current accumulator value when a strobe input transition in the direction selected during the last configuration of the module.	N/A
Local Fast Inputs	(12) 5 VDC or 10 to 30 VDC	(12) 8.0 VDC (non–TTL), 1.5 VDC (TTL)
Local Fast Outputs	(4) 10 to 30 VDC @ 500 mA maximum 4.75 to 6 VDC @ 20 mA maximum	Continuous Output Current (10–30 VDC supply) 1.0 A (each output 1–4) 0.5 A (each output 5°V8)
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	250 mA @ 5 VDC	360 mA @ 5 VDC

Motion Modules (Servo Control)

Motion control integrated into the Series 90-30 fosters high performance point-to-point applications. GE Motion Control modules can be flexibly applied to a variety of digital, analog, and stepper motion applications.

	IC693DSM324	IC693DSM314
Product Name	**Series 90-30 Digital Servo Module, 4-Axis**	**Series 90-30 Digital Servo Module, 4-Axis (Fiber Optic Interface to Amplifiers)**
Lifecycle Status	Active	Active
Module Type	Servo Module	Servo Module
Drive	Beta i Series Digital Servos	Beta i Series Digital and Analog Servos
Drive Interface	Fiber Optic, Up to 100 meters between Amplifiers with total length of 400 meters.	Digital for Alpha and Beta Series. ±10V velocity or torque command for analog
Axes	4 Digital	2 Digital and 1 analog or 4 analog
Encoder Support	Incremental Master (1Mhz)	Incremental Master (1Mhz)
Axis Configuration	Parallel or Cascade	Parallel or Cascade
User Memory	15 KBytes	15 KBytes
Analog Inputs	2	4 - In Digital Mode 8 - In Analog Mode
Analog Outputs	2	4 - In Digital Mode 0 - In Analog Mode
Local Fast Inputs	12 (24 V), 8 (5 V)	12 (24 V), 8 (5 V)
Local Fast Outputs	4 SSR Outputs (24 VDC, 125 mA)	4 SSR Outputs (24 VDC, 125 mA)
Connector Type	(1) 36 pin (5 VDC) (1) 24 pin (24 VDC)	(4) 36 pin
Internal Power Used	1360 mA @ 5 VDC	1300 mA @ 5 VDC

Remote Expansion Modules

The Ethernet distributed I/O interface (Ethernet Interface Unit), is a high performance Ethernet network interface module. The ENIU enables users to connect Series 90-30 I/O remotely over Ethernet to a master controller. The ENIU provides the power of Single Point of Connect. You can connect anywhere on the I/O network and monitor, configure, and troubleshoot any ENIU. The master controller is also accessible over the same network to program, troubleshoot and configure. The ENIU features a built-in Ethernet switch with two 10/100Mbit ports (RJ-45) allowing the user to daisy chain to the next ENIU. The ENIU automatically senses the cable type, eliminating the need for a crossover cable. The ENIU supports one IP address. Redundancy is provided as a standard feature with the ENIU.

	IC693NIU004
Product Name	**Ethernet Remote I/O Expansion (Slave)**
Lifecycle Status	Active
Module Type	Ethernet Remote I/O Interface Module
I/O Discrete Points	2048 Inputs/2048 Outputs maximum
I/O Analog Points	1264 Inputs and 512 Outputs maximum
User Logic Memory	N/A
Network Data Rate	10/100Mbit ports (RJ-45)
Entity Type	Slave
Network Distance	Media Dependent
Bus Diagnostics	Supported
Number of Drops Supported	Network Dependent. Each Ethernet NIU can also support up to 7 additional local I/O racks (IC693CHSxxx)
Internal Power Used	N/A

Portable Program Download Device (PPDD)

The Portable Program Download Device enables the user to easily upload and download Series 90-30 configuration and logic from/to a USB Memory Stick. Portable Program Download Device (PPDD) will support commercial memory stick devices using USB connection. The purpose of the PPDD is to allow users to store and download their logic applications and configuration to GE Series 90-30 PLCs without the need of a PC. The PPDD plugs into the 15 pin RS-485 port on the Series 90-30 CPU base power supply. The RS-485 port provides the power for the PPDD. Series 90-30 logic and configuration files can be zipped and easily emailed to remote locations for Series 90-30 downloads.

There are many advantages of the PPDD such as:

- No PC required to backup applications or download applications
- No expensive travel to perform field upgrades, just email the file to the remote location
- Compatible with commercial off the shelf USB Memory Sticks
- The PPDD can be panel mounted, DIN rail mounted or hand held
- Supports diagnostics to ensure that the CPU is compatible with the application
- OEM Password Protection supported
- Simple to operate, LEDs to show activity, error and status. Push button to start download and selector switch for direction of download, to the PLC or to the memory stick.
- Designed for the industrial environment UL and CE (not Class 1 Div 2 approved)

PPDD features:

- Slide switch for direction of data storage
- Status and Diagnostic LEDs

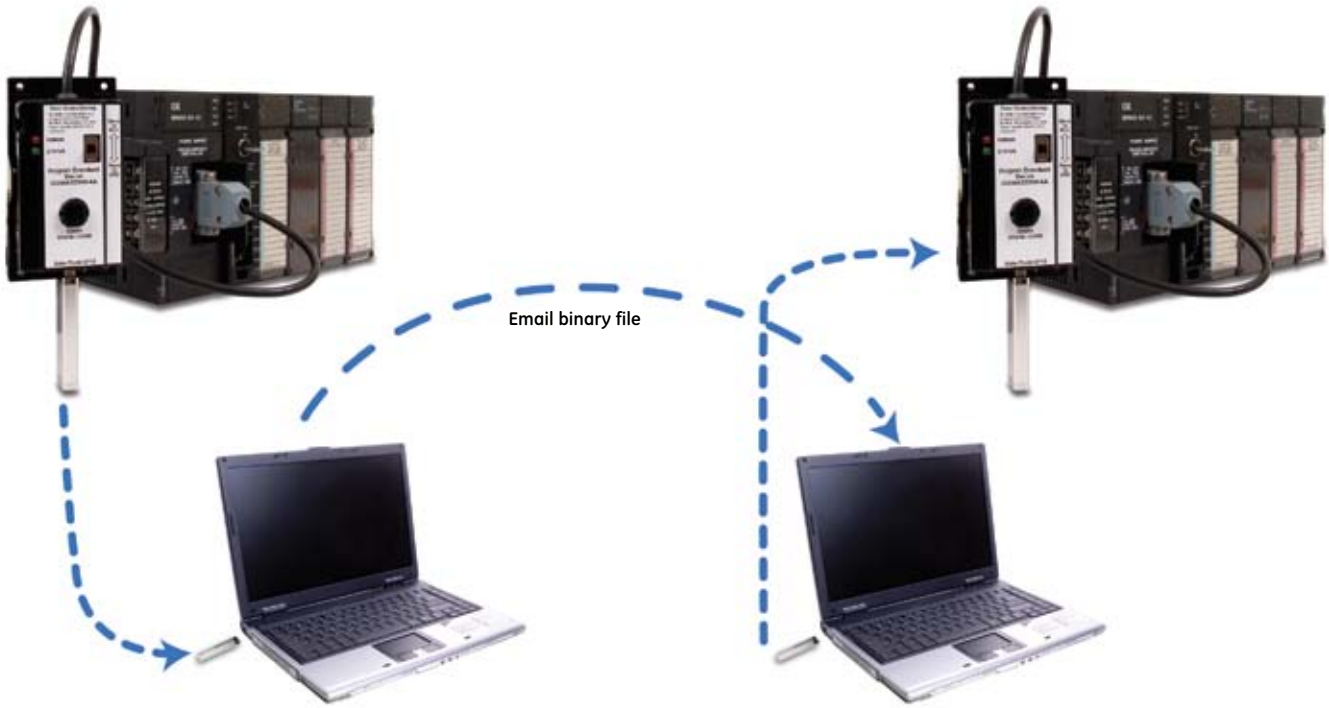
LEDs Status

	Error (Red)	Status (Green)
LED On Steady	On when there isn't a Memory Stick attached	On after button has been pushed and name in PLC matches and when download is complete
LED Flashing Fast Flash (500msec on 500msec off) Slow Flash (1 sec on 1 sec off)	Flashing when CPU doesn't match or Memory Stick doesn't have the proper file Flashing if Verify fails	Slow Flash During Download Fast Flash when CPU type matches but name in PLC doesn't match
LED Off	Off during normal conditions with no errors	Off prior to button being pushed for download

The Portable Program Download Device is simple to use. The example below demonstrates the four easy steps of downloading an application and emailing it to a remote location for application upgrade.

Step 1.
Slide PPDD selector toward USB memory stick. Press PPDD download button. The PPDD will store/verify the Series 90-30 application and configuration onto the USB memory stick.

Step 4.
Place the USB memory stick in the PPDD, slide selector toward controller. Press PPDD download button. The PPDD will stop the CPU and download/verify file. The CPU can be placed in the Run mode via the key switch or cycling power.



Step 2.
Remove the memory stick from the PPDD and connect it to your PC. Copy the binary file from the memory stick to your PC and email to remote location.

Step 3.
Remote location takes the binary file that is in the email and stores it on a USB memory stick.

Portable Program Download Device

IC690ACC990	Portable Program Download Device. Supports standard USB memory devices to store and load Series 90-30 PLC applications without the need of a PC.

Accessories

IC694TBB032	High Density 32 Point Terminal Block Box Style	Active
IC694TBB132	High Density 32 Point Terminal Block Box Style with Extended Shroud for Large Wiring Bundles	Active
IC694TBS032	High Density 32 Point Terminal Block Spring Style	Active
IC694TBS132	High Density 32 Point Terminal Block Spring Style with Extended Shroud for Large Wiring Bundles	Active
IC690ACC901	Mini-Converter Kit with cable (RS-485/RS-232)	Active
IC690ACC903	RS-485 Port Isolator	Active
IC690CDR002	User Manuals, InfoLink CD-ROM Documentation, single-user license	Active
IC693ACC301	Replacement Battery, CPU & PCM (qty 2)	Active
IC693ACC302	High capacity battery pack. The new Auxiliary Battery Pack (IC693ACC302) will enable Series 90-30 (except CPU374) to go up to 75 months (shelf life of 10 years) of RAM memory backup w/no power & the CPU374 backup for 15 months	Active
IC693ACC307	I/O Bus Terminator Plug	Active
IC693ACC308	Rack Adaptor Bracket, Series 90-30 10 Slot to 19" (Front Mount)	Active
IC693ACC310	Filler Module, Blank Slot	Active
IC693ACC311	Twenty Point Terminal Blocks (qty 6)	Active
IC200ACC003	EZ Store Device, CPU374 program download without the need of a PC.	Active
IC693ACC319	Spare Plastic Cases Parts Kit (I/O, CPU, PCM)	Active
IC693MLX000	Spare Series 90-30 I/O Modules Label Kit (various quantities)	Active

Terminal Block Quick Connect

Terminal Block Quick Connect (TBQC) for selected I/O modules enables the user to easily connect interposing terminal blocks. The TBQC consists of an I/O faceplate adapter that includes a 24 pin Fujitsu male connector (the faceplate replaces the 20 screw terminal connector on front of I/O module, not compatible with the high density 36 screw terminals), cable and interposing terminal block.

TBQC I/O Module Face Plate Adapter

IC693ACC334	I/O module face plate adapter for 20 screw type I/O modules. Faceplate provides a 24 pin male Fujitsu connector.	Active

TBQC Interposing Terminal Block

IC693ACC329	Interposing terminal block base for IC693MDL645, IC693MDL646, and IC693MDL240. The base can also be used with any 20 point terminal discrete or analog modules not listed.	Active
IC693ACC330	Interposing terminal block base for IC693MDL740 and IC693MDL742	Discontinued
IC693ACC331	Interposing terminal block base for IC693MDL741	Discontinued
IC693ACC332	Interposing terminal block base for IC693MDL940	Active
IC693ACC333	Interposing terminal block base for IC693MDL340	Active
IC693ACC337	Interposing terminal block base for IC693MDL654/655/752/753	Active

TBQC Cables

IC693CBL327	Cable, Left Side, One - 24 Pin 90 Degree Connector, 3 Meter. Cable has a connector on only one end and open on the other. Cable used with TBQC I/O Face Plate Adapter or Fujitsu style I/O modules.	Active
IC693CBL328	Cable, Right Side, One - 24 Pin 90 Degree Connector, 3 Meter. Cable has a connector on only one end and open on the other. Cable used with TBQC I/O Face Plate Adapter or Fujitsu style I/O modules.	Active
IC693CBL329	Cable, Left Side, One - 24 Pin 90 Degree Connector, 1 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active
IC693CBL330	Cable, Right Side, One - 24 Pin 90 Degree Connector, 1 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active
IC693CBL331	Cable, Left Side, One - 24 Pin 90 Degree Connector, 2 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active
IC693CBL332	Cable, Right Side, One - 24 Pin 90 Degree Connector, 2 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active
IC693CBL333	Cable, Left Side, One - 24 Pin 90 Degree Connector, 0.5 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active
IC693CBL334	Cable, Right Side, One - 24 Pin 90 Degree Connector, 0.5 Meter. from TBQC I/O Face Plate Adapter to TBQC Interposing Terminal Block.	Active

External Power Supplies

IC690PWR024	Field Power Supply 24 VDC 5 Amps	Active
IC690PWR124	Field Power Supply 24 VDC 10 Amps	Active

Rack to Rack Expansion Cables

IC693CBL300	Cable, I/O Base Expansion, 1 Meter, Shielded	Active
IC693CBL301	Cable, I/O Base Expansion, 2 Meters, Shielded	Active
IC693CBL302	Cable, I/O Base Expansion, 15 Meters, Shielded with built-in terminator	Active
IC693CBL312	Cable, I/O Base Expansion, 0.15 Meter, Shielded	Active
IC693CBL313	Cable, I/O Base Expansion, 8 Meters, Shielded	Active
IC693CBL314	Cable, I/O Base Expansion, 15 Meters, Shielded with no built-in terminator	Discontinued
IC693ACC307	I/O Bus Terminator Plug	Active

Configuration Guidelines

When configuring a Series 90-30 the following guidelines should be considered

1. High density IC693 I/O modules require a terminal block assembly. IC694TBSxxx (spring clamp termination) or IC694TBBxxx (box style termination) are required.
2. If the CPU is powered down frequently a high capacity battery should be considered. (IC693ACC302)
3. Add up the power consumption to ensure enough power supply capacity.

Examples of Typical Application

Configuration for Controller (Example application requiring (120) 24 VDC inputs and (80) Relay outputs AC power supply)

Power Supply Current Required (mA)	Qty	Part Number	Description
670 mA @ 5 VDC	1	IC693CPU350	CPU with 32K of memory
	1	IC693PWR321	120/240 VAC, 125 VDC Power Supply, 3 Amps @ 5 VDC; 0.625 @ 24 VDC relay and 0.833 @ 24 VDC isolated
420 mA @ 5 VDC	1	IC693CHS391	10 Slot CPU Base
1200 mA @ 5 V	4	IC693MDL660	Discrete Input Module, 24 VDC Positive Logic, 32 points (Requires terminal block)
35 mA @ 5 V; 110 mA @ 24 VDC Relay	5	IC693MDL940	Discrete Output Module, Relay 2.0 A per point Form A, 16 points (Terminal block included).
	4	IC694TBB032	Terminal Block, Box Style
	1	BC646MPS001	Logic Developer - PLC Standard - w/Programming Cable
Total current from power supply required:	**2325 mA @ 5 V; 110 mA @ 24 VDC Relay.**		
Options to consider			
1.4 Amps @ 5 VDC	1	IC693CPU374	CPU with built-in Ethernet 10/100Mbits and Web support
	1	IC690PWR024	24 VDC, 5 Amp Output Power and 120/230 VAC Input Power Power Supply
	1	IC693ACC302	Long term battery for CPU
	1	IC754VSI06STD	QuickPanel View Intermediate 6 inch STN Touch Operator Interface

Configuration for Controller (100) 24 VDC inputs, (50) 24 VDC Outputs with ESCP protection, (20) Relay outputs, (12) 4 to 20 mA Analog Inputs, (12) 4 to 20 mA Analog Outputs and 24 VDC power supply. Also requires Profibus Master and Ethernet communications.

Power Supply Current Required	Qty	Part Number	Description
1.4 Amps @ 5 VDC	1	IC693CPU374	CPU with built-in Ethernet 10/100 Mbits and Web support
	2	IC693PWR331	24 VDC Power Supply, current available 6 Amps @ 5 VDC; 0.625 Amps @ 24 VDC relay; 0.833 @ 24 VDC isolated
420 mA @ 5 VDC	1	IC693CHS391	10 Slot CPU Base
1200 mA @ 5 VDC	4	IC693MDL660	Discrete Input Module, 24 VDC Positive Logic, 32 points (Requires terminal block)
600 mA @ 5 VDC	2	IC693MDL754	Discrete Output Module, 24 VDC Output with ESCP, 32 points (Requires terminal block)
35 mA @ 5 VDC; 110 mA @ 24 VDC Relay	2	IC693MDL940	Discrete Output Module, Relay 2.0 A per point Form A, 16 points (Terminal block included).
120 mA @ 5 VDC; 65 mA-User Supplied 24 VDC	1	IC693ALG223	Analog Input, 16 channels, current. (Terminal block included).
220 mA @ 5 VDC; 630 mA-User Supplied 24 VDC	2	IC693ALG392	Analog Output module, supports voltage and current, 8 channels (Terminal block included).
450 mA @ 5 VDC	1	IC693PBM200	Profibus Master module, supports V0
150 mA @ 5VDC	1	IC693CHS392	10 slot I/O expansion rack
	1	IC693CBL312	Rack Expansion Cable, 0.15 meters
	1	IC693ACC307	I/O Bus Terminator Plug
	6	IC694TBB032	Terminal Block, Box Style
	1	BC646MPS001	Logic Developer - PLC Standard - w/Programming Cable

In the above configuration, all of the modules cannot go into one base. Therefore the I/O modules are divided into two bases.

Options to consider			
	1	IC200ACC003	EZ Store Device, CPU374 program download without the need of a PC.
	1	IC690PWR024	24 VDC, 5 Amp Output Power and 120/230 VAC Input Power Power Supply
	1	IC693ACC302	Long term battery for CPU
	1	IC754VSI06STD	QuickPanel View Intermediate 6 inch STN Touch Operator Interface

α and βi Series Servo Amplifiers

All Digital Servo Systems Offer High Performance and Reliability. FANUC HV*i*s and β*i* Series Servo Drives, based on over five million axes installed worldwide, offer superior reliability and performance for unprecedented mean time between failure. The HV*i*s and β*i* Series Servos are available in a wide range of ratings for use with the PACMotion motion controller.

High-Performance Serial Encoders

Standard serial encoders built into the motors provide exceptional feedback resolution of 64K or 128K counts per revolution for *i*s Series motors and one million counts per revolution for HV*i*s Series motors. Serial encoders support higher resolutions at high motor velocities than standard quadrature encoders and are more immune to noise. An optional battery connection provides absolute position feedback, eliminating the need to home the system after a power shutdown.

Reduced Tuning and Setup

There is no need for potentiometer tuning or personality modules; little tuning is required for properly sized drives. All drive parameters are stored in the controller in a standard motor database. Configuration settings are not stored in the drive, making it possible to replace drives with little set-up time. Stored drive and machine parameters are quickly transferred to repeat production machines.

All-Digital System

All control loops—current, velocity, and position—are closed in the GE PACMotion controller. High-speed microprocessors and/or digital signal processors (DSPs) in the controller provide loop update times of 250 µs. The high response servo system can compensate for machine design limitations, yielding faster acceleration/deceleration rates and better responses to load changes.

Series	Motor Series	Controllers	Command Interface	Continuous Torque Range		Power Supply
				In-lb	Nm	
aHVi	aHVi, aHVis	PMM335	Fiber Optic	195-664	22-75	Separate PSM
βi	βis	PMM335	Fiber Optic	3.5-177	0.4-20	Built-in
βHVi	βHVis	PMM335	Fiber Optic	17.7-177	20-Feb	Built-in

All-Digital Servo Command Signals

The PMM335 PACMotion Controller and β*i* or α*i* Series amplifiers use a high speed fiber optic command interface. This digital interface improves efficiency by varying the on-time of the transistor switches that control motor voltage and current. With its superior noise immunity, both of these FANUC digital command interfaces allows for an increased signal to noise ratio for improved accuracy and performance.

Agency Approvals

UL, IEC rating and CE mark compliant

INFO

For application, installation, and tuning information, consult the Services website at www.ge-ip.com.

VersaMotion

VersaMotion is a family of servo motors and amplifiers that can be easily connected to the Series 90-30 DSM314. The VersaMotion amplifier supports high speed pulse and direction commands from the controllers. The VersaMotion servo drive is simple to use and maintain with the added diagnostics and removable terminal strips. Amplifier setup can be accomplished using the VersaMotion software included with Proficy Machine Edition or using the convenient front panel keypad.

Key Features:

- Versatile analog or pulse command interface
- Position/Speed/Torque modes
- Dual control modes
- Internal single-axis position control
- Electronic gearing
- External JOG function
- Speed/Torque limit operation
- Built-in keypad/display for setup and diagnostics
- Motor settling time below 1 ms
- Low speed stability and performance: less than 0.5% error at 1 RPM
- 10msec acceleration time from running without load -/+ 3000 RPM
- High speed inertia corrections (16 levels of system stiffness and responsiveness)

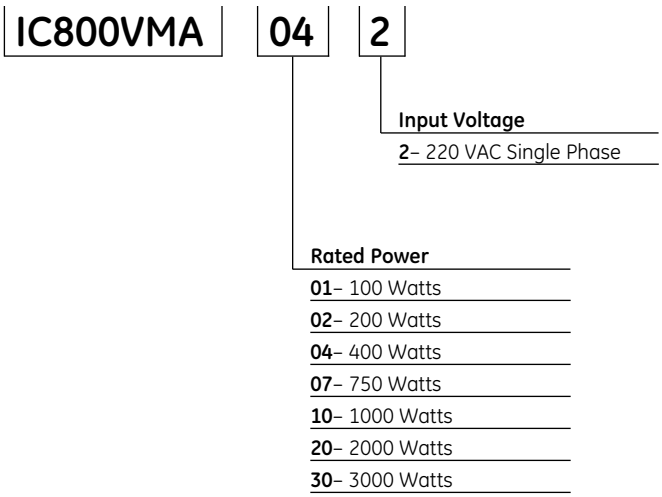
Built-in Functions:

- Point-to-Point single axis position control
- Simple stand-alone positioning function with 8 internal stored position settings
- Move to Home function
- Position Teaching capability
- Incremental encoder feedback (2500 ppr)
- User-definable Acceleration/Deceleration with jerk limiting (s-curve)
- Feed step control function
- Modbus Slave serial port (RS-485/RS-422) for reading and writing parameters from Machine Edition

Machine Edition VersaMotion Set-up Features:

- Configuration Parameter Editor (clear, read, write functions) and initial configuration wizard
- Calculation tools to determine proper conversion from encoder counts to desired user programming units
- Three channel digital oscilloscope to display and record drive status on-line
- Alarm history and status monitor diagnostic screens
- Digital I/O set-up and monitoring

Servo Amplifier Part Number Sequence



Example: IC800VMA042 is a 400 watt 220 VAC servo amplifier

Amplifiers Technical Data

Permissible Frequency Fluctuation	50 / 60 Hz ±5%
Resolution/Quadrature Feedback Counts	2500 ppr /10000 cpr
Control Modes	Position/Velocity/Torque
Dynamic Brake	Built-in
Position Control Mode:	
Maximum Input Pulse Frequency	500KPPS (Line Driver) / Maximum 200KPPS (Open Collector)
Pulse Type	Pulse/Direction; CW/CCW; A/B Phase
Command Source	External pulse train/ Internal parameters
Torque Limit Operation	Yes
Feed Forward Compensation	Yes
Analog Commands: Voltage Range	0 to ±10 VDC
Torque and Velocity Control Mode: Command Source	External analog signal / Internal parameters
Speed Control Range	3.513888889
Speed Control Frequency Response	Maximum 450 Hz
Torque Control Mode Permissible Time for Overload	8 seconds under 200% rated output
Communications Interface	RS-232 / RS-485 /RS-422
Environmental Altitude	Altitude 1000 meters above sea level or lower
Environmental Operating Temperature	0 to 55°C (Forced cooling for operation above 55°C)
Environmental Storage Temperature	-20°C to 65°C
Environmental Humidity	0 to 90% (Non condensing)
Vibration	<20 Hz: 9.8 m/sec/sec (1G); 20 to 50 Hz: 5.88 m/sec/sec (0.6 G)
Standards	IEC/EN 61800-5-1, UL 508C, TUV, C-tick

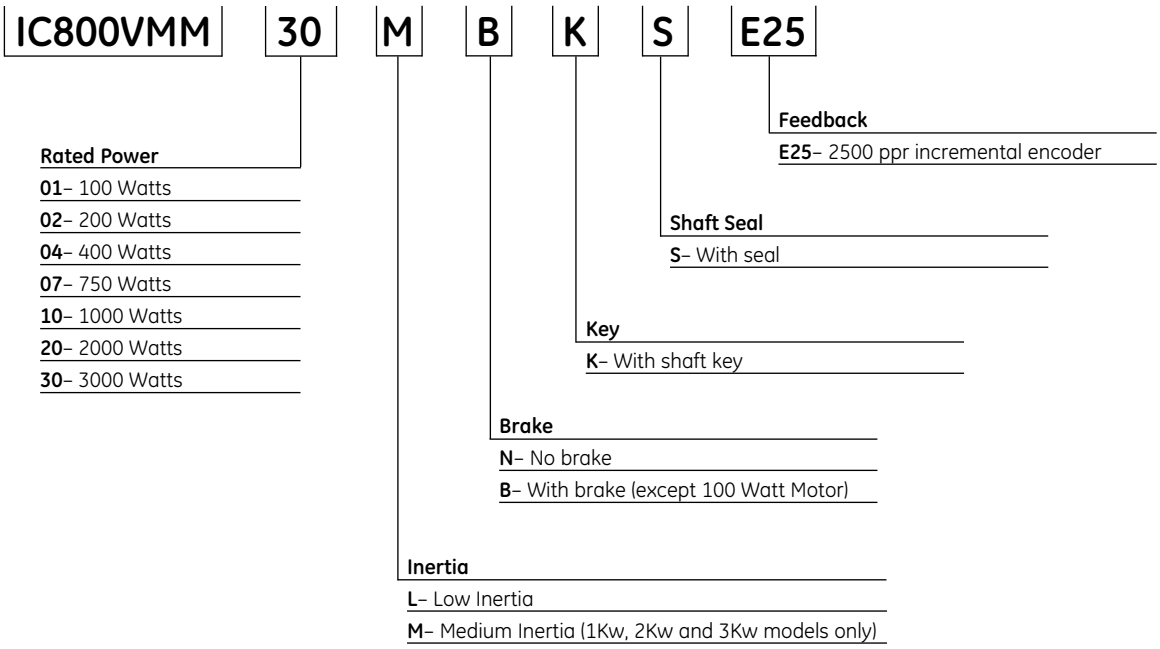
Amplifiers

The VersaMotion family of servo amplifiers offers a cost effective solution for a broad range of motion applications. These versatile amplifiers support simple stand-alone positioning capability using up to 8 stored motion profiles or can be connected to any motion controller using an analog or pulse command interface. A built-in touchpad and display provides convenient access to configuration parameters and system information. The serial interface supports multi-drop system configurations and Modbus communication protocol.

	IC800VMA012	IC800VMA022	IC800VMA042	IC800VMA072
Product Name	**VersaMotion Amplifier**	**VersaMotion Amplifier**	**VersaMotion Amplifier**	**VersaMotion Amplifier**
Lifecycle Status	Active	Active	Active	Active
Rated Output Power	100W	200W	400W	750W
Voltage/Frequency	Three-phase or Single-phase 220 VAC 50/60 Hz	Three-phase or Single-phase 220 VAC 50/60 Hz	Three-phase or Single-phase 220 VAC 50/60 Hz	Three-phase or Single-phase 220 VAC 50/60 Hz
Permissible Voltage Fluctuation	Three-phase: 170 ~ 255 VAC Single-phase: 200 ~ 255 VAC	Three-phase: 170 ~ 255 VAC Single-phase: 200 ~ 255 VAC	Three-phase: 170 ~ 255 VAC Single-phase: 200 ~ 255 VAC	Three-phase: 170 ~ 255 VAC Single-phase: 200 ~ 255 VAC
Cooling System	Convection	Convection	Convection	Fan Cooling
Electronic Gear Ratio	Gear Ratio = N/M where N 1~32767, M: 1:32767 (1/50<N/M<200)	Gear Ratio = N/M where N: 1~32767, M: 1:32767 (1/50<N/M<200)	Gear Ratio = N/M where N: 1~32767, M: 1:32767 (1/50<N/M<200)	Gear Ratio = N/M where N: 1~32767, M: 1:32767 (1/50<N/M<200)

	IC800VMA102	IC800VMA202	IC800VMA302
Product Name	**VersaMotion Amplifier**	**VersaMotion Amplifier**	**VersaMotion Amplifier**
Lifecycle Status	Active	Active	Active
Rated Output Power	1KW	2KW	3KW
Voltage/Frequency	Three-phase or Single-phase 220 VAC 50/60 Hz	Three-phase 220 VAC 50/60 Hz	Three-phase 220 VAC 50/60 Hz
Permissible Voltage Fluctuation	Three-phase: 170 ~ 255 VAC Single-phase: 200 ~ 255 VAC	Three-phase: 170 ~ 255 VAC	Three-phase: 170 ~ 255 VAC
Cooling System	Fan Cooling	Fan Cooling	Fan Cooling
Electronic Gear Ratio	Gear Ratio = N/M where N 1~32767, M: 1:32767 (1/50<N/M<200)	Gear Ratio = N/M where N: 1~32767, M: 1:32767 (1/50<N/M<200)	Electronic gear N/M multiple N: 1~32767, M: 1:32767 (1/50<N/M<200)

Servo Motor Part Number Sequence



Example: IC800VMM30MBKSE25 is a 3000 watt medium Inertia motor with 2500 ppr encoder, brake, keyway and shaft seal.

Motors Technical Data

Insulation Class	Class B
Insulation Resistance	>100M ohm, 500 VDC
Insulation Strength	1500 VAC, 50Hz, 60 seconds
Vibration Grade (um)	15
Brake Power (VDC)	24
Operating Temperature (C)	0°~40°
Storage Temperature (C)	-10°~80°
Humidity	20~90%RH (non condensing)
Vibration	2.5G
IP Rating	IP65 (except shaft and connector)

Motors

The VersaMotion family of servo motors offers high servo performance in a compact package. The motors range from 100 W to 3 kW with continuous torque ratings from 0.3 Nm to 14.3 Nm. All motors have metric mounting configurations and include a shaft key and oil seal. For vertical axes or applications that need to hold position during power loss motors with 24 VDC holding brakes are available. Motors are matched with the VersaMotion amplifiers.

	IC800VMM01L	IC800VMM02L	IC800VMM04L	IC800VMM07L
Product Name	**VersaMotion 100 Watt**	**VersaMotion 200 Watt**	**VersaMotion 400 Watt**	**VersaMotion 750 Watt**
Lifecycle Status	Active	Active	Active	Active
Rated Output (kW)	0.1	0.2	0.4	0.75
Rated Torque (Nm)	0.32	0.64	1.27	2.39
Maximum Torque (Nm)	0.96	1.92	3.82	7.16
Rated Speed (RPM)	3000	3000	3000	3000
Maximum Speed (RPM)	5000	5000	5000	5000
Rated Current (Amps)	0.9	1.55	2.6	5.1
Maximum Current (Amps)	2.7	4.65	7.8	15.3
Rotor Moment of Inertia (Kg.m2 x 10-4)	0.037	0.177	0.277	1.13
Mechanical Time Constant (msec)	0.75	0.8	0.53	0.63
Torque Constant - KT (Nm)	0.36	0.41	0.49	0.47
Voltage Constant - KE (mV/rmp)	13.6	16	17.4	17.2
Armature Resistance (Ohm)	9.3	2.79	1.55	0.42
Armature Inductance (mH)	24	10.84	6.84	3.53
Electrical Time Constant (msec)	2.58	3.89	4.43	8.37
Maximum Radial Shaft Load (Newton)	78.4	196	196	245
Maximum Thrust Shaft Load (Newton)	39.2	68	68	98

Motors

The VersaMotion family of servo motors offers high servo performance in a compact package. The motors range from 100 W to 3 kW with continuous torque ratings from 0.3 Nm to 14.3 Nm. All motors have metric mounting configurations and include a shaft key and oil seal. For vertical axes or applications that need to hold position during power loss motors with 24 VDC holding brakes are available. Motors are matched with the VersaMotion amplifiers.

	IC800VMM10L	IC800VMM10M	IC800VMM20L	IC800VMM20M	IC800VMM30M
Product Name	**VersaMotion 1000 Watt**	**VersaMotion 1000 Watt**	**VersaMotion 2000 Watt**	**VersaMotion 2000 Watt**	**VersaMotion 3000 Watt**
Lifecycle Status	Active	Active	Active	Active	Active
Rated Output (kW)	1	1	2	2	3
Rated Torque (Nm)	3.18	4.77	6.37	9.55	14.32
Maximum Torque (Nm)	9.54	14.32	19.11	28.66	42.96
Rated Speed (RPM)	3000	2000	3000	2000	2000
Maximum Speed (RPM)	5000	3000	5000	3000	3000
Rated Current (Amps)	7.3	5.6	11.3	11	16.1
Maximum Current (Amps)	21.9	24.9	33.9	33	48.3
Rotor Moment of Inertia (Kg.m2 x 10-4)	2.65	9.14	4.45	15.88	55
Mechanical Time Constant (msec)	0.74	1.64	0.66	1.05	1.06
Torque Constant - KT (Nm/A)	0.44	0.85	0.53	0.87	0.89
Voltage Constant - KE (mV/rpm)	16.8	31.9	19.2	31.8	32
Armature Resistance (Ohm)	0.2	0.465	0.14	0.174	0.052
Armature Inductance (mH)	2	5.99	1.53	2.76	1.38
Electrical Time Constant (msec)	10.26	12.88	10.63	15.86	26.39
Maximum Radial Shaft Load (Newton)	490	490	490	490	1470
Maximum Thrust Shaft Load (Newton)	98	98	98	98	490
Amplifier Model	IC800VMA102	IC800VMA102	IC800VMA202	IC800VMA202	IC800VMA302

VersaMotion Accessories

Accessories

IC800VMACONCN1	CN1 I/O Connector	Active
IC800VMACONCN2	CN2 Encoder Connector	Active
IC800VMACONCN3	CN3 Communication Connector	Active
IC800VMACONACP	AC Power Connector (100W to 1kW models only)	Active
IC800VMACONMTRP	Motor Power Connector (100W to 1kW models only)	Active
IC800VMADBR001	External Braking Resistor Connector (100W to 1kW models only)	Active

Motor Connectors

IC800VMMCONP001	Motor Power Connector for 100 Watt to 750 Watt motors without brake	Active
IC800VMMCONP002	Motor Power Connector for 100 Watt to 750 Watt motors with brake	Active
IC800VMMCONP003	Motor Power Connector for 1000 Watt or 2000 Watt motors with or without brake	Active
IC800VMMCONP004	Motor Power Connector for 3000 Watt motors with or without brake	Active
IC800VMMCONE001	Encoder Connector for 100 Watt to 750 Watt motors	Active
IC800VMMCONE002	Encoder Connector for 1000 Watt and larger motors	Active

Motor Power Cables

IC800VMCP030	Power Cable for 100 Watt to 750 Watt servo motor without brake, 3 m (9.8 feet)	Active
IC800VMCP050	Power Cable for 100 Watt to 750 Watt servo motor without brake, 5 m (16.4 feet)	Active
IC800VMCP100	Power Cable for 100 Watt to 750 Watt servo motor without brake, 10 m (32.8 feet)	Active
IC800VMCP200	Power Cable for 100 Watt to 750 Watt servo motor without brake, 20 m (65.7 feet)	Active
IC800VMCP1030	Power Cable for 1000 Watt servo motor without brake, 3 m (9.8 feet)	Active
IC800VMCP1050	Power Cable for 1000 Watt servo motor without brake, 5 m (16.4 feet)	Active
IC800VMCP1100	Power Cable for 1000 Watt servo motor without brake, 10 m (32.8 feet)	Active
IC800VMCP1200	Power Cable for 1000 Watt servo motor without brake, 20 m (65.7 feet)	Active
IC800VMCP2030	Power Cable for 2000 Watt servo motor without brake, 3 m (9.8 feet)	Active
IC800VMCP2050	Power Cable for 2000 Watt servo motor without brake, 5 m (16.4 feet)	Active
IC800VMCP2100	Power Cable for 2000 Watt servo motor without brake, 10 m (32.8 feet)	Active
IC800VMCP2200	Power Cable for 2000 Watt servo motor without brake, 20 m (65.7 feet)	Active
IC800VMCP3030	Power Cable for 3000 Watt servo motor without brake, 3 m (9.8 feet)	Active
IC800VMCP3050	Power Cable for 3000 Watt servo motor without brake, 5 m (16.4 feet)	Active
IC800VMCP3100	Power Cable for 3000 Watt servo motor without brake, 10 m (32.8 feet)	Active
IC800VMCP3200	Power Cable for 3000 Watt servo motor without brake, 20 m (65.7 feet)	Active

Brake and Motor Power Cables

IC800VMCB030	Brake and Motor Power Cable for 200 Watt to 750 Watt servo motor with brake, 3 m (9.8 feet)	Active
IC800VMCB050	Brake and Motor Power Cable for 200 Watt to 750 Watt servo motor with brake, 5 m (16.4 feet)	Active
IC800VMCB100	Brake and Motor Power Cable for 200 Watt to 750 Watt servo motor with brake, 10 m (32.8 feet)	Active
IC800VMCB200	Brake and Motor Power Cable for 200 Watt to 750 Watt servo motor with brake, 20 m (65.7 feet)	Active
IC800VMCB1030	Brake and Motor Power Cable for 1000 Watt servo motor with brake, 3 m (9.8 feet)	Active
IC800VMCB1050	Brake and Motor Power Cable for 1000 Watt servo motor with brake, 5 m (16.4 feet)	Active
IC800VMCB1100	Brake and Motor Power Cable for 1000 Watt servo motor with brake, 10 m (32.8 feet)	Active
IC800VMCB1200	Brake and Motor Power Cable for 1000 Watt servo motor with brake, 20 m (65.7 feet)	Active
IC800VMCB2030	Brake and Motor Power Cable for 2000 Watt servo motor with brake, 3 m (9.8 feet)	Active
IC800VMCB2050	Brake and Motor Power Cable for 2000 Watt servo motor with brake, 5 m (16.4 feet)	Active
IC800VMCB2100	Brake and Motor Power Cable for 2000 Watt servo motor with brake, 10 m (32.8 feet)	Active
IC800VMCB2200	Brake and Motor Power Cable for 2000 Watt servo motor with brake, 20 m (65.7 feet)	Active
IC800VMCB3030	Brake and Motor Power Cable for 3000 Watt servo motor with brake, 3 m (9.8 feet)	Active
IC800VMCB3050	Brake and Motor Power Cable for 3000 Watt servo motor with brake, 5 m (16.4 feet)	Active
IC800VMCB3100	Brake and Motor Power Cable for 3000 Watt servo motor with brake, 10 m (32.8 feet)	Active
IC800VMCB3200	Brake and Motor Power Cable for 3000 Watt servo motor with brake, 20 m (65.7 feet)	Active

Encoder Cables

IC800VMCE030	Encoder Cable for 100 to 750 Watt, 3 m (9.8 feet)	Active
IC800VMCE050	Encoder Cable for 100 to 750 Watt, 5 m (16.4 feet)	Active
IC800VMCE100	Encoder Cable for 100 to 750 Watt, 10 m (32.8 feet)	Active
IC800VMCE200	Encoder Cable for 100 to 750 Watt, 20 m (65.7 feet)	Active
IC800VMCE1030	Encoder Cable for 1000 Watt and greater, 3 m (9.8 feet)	Active
IC800VMCE1050	Encoder Cable for 1000 watt and greater, 5 m (16.4 feet)	Active
IC800VMCE1100	Encoder Cable for 1000 watt and greater, 10 m (32.8 feet)	Active
IC800VMCE1200	Encoder Cable for 1000 watt and greater, 20 m (65.7 feet)	Active

I/O Terminal Block

IC800VMTBC005	I/O Terminal Block Breakout Board and 0.5 m (1.6 feet) Cable	Active

External Braking Resistors

IC800VMBR040	40 Ohm, 400 Watt External Braking (Regeneration) Resistor	Active
IC800VMBR020	20 Ohm, 1000 Watt External Braking (Regeneration) Resistor	Active

Communications and I/O Interface Cables

IC800VMCS030	Communications Cable from servo amplifier to PC, 3 m (9.8 feet)	Active
IC800VMCI010	Flying lead I/O interface cable, 1 meter	Active
IC800VMCI030	Flying lead I/O interface cable, 3 meter	Active

Software Configuration Tool

IC646MPM101	Proficy Logic Developer - PLC Nano/Micro and VersaMotion, Programming Cable (No Upgrades included)	Active
BC646MPM101	Proficy Logic Developer - PLC Nano/Micro and VersaMotion, Programming Cable (Includes 15 months of upgrades)	Discontinued

Examples of Typical Application using a Series 90-30

Application: 1000 Watt Low Inertia Motor with Brake. Configuration for Controller (100) 24 VDC inputs, (50) 24 VDC Outputs with ESCP protection, (20) Relay outputs, (12) 4 to 20 mA Analog Inputs, (12) 4 to 20 mA Analog Outputs and 24 VDC power supply. Also requires Profibus Master and Ethernet communications.

Qty	Part Number	Description
		Controller, I/O and Display
1	**IC693CPU374**	CPU with built-in Ethernet 10/100Mbits and Web support
2	**IC693PWR331**	24 VDC Power Supply, current available 6 Amps @ 5 VDC; 0.625 Amps @ 24 VDC relay; 0.833 @ 24 VDC isolated
1	**IC693CHS391**	10 Slot CPU Base
1	**IC693DSM314**	Servo Motion Module, 2 digital and 1 analog axis supported
1	**IC693ACC336**	DSM Analog Servo Interface Terminal Board
1	**IC693CBL324**	DSM Analog TB Interface Cable, 1 m (3.28 feet)
1	**IC800VMCI010**	VersaMotion Flying Lead I/O Interface Cable, 1 m (3.28 feet)
4	**IC693MDL660**	Discrete Input Module, 24 VDC Positive Logic, 32 points (Requires terminal block)
2	**IC693MDL754**	Discrete Output Module, 24 VDC Output with ESCP, 32 points (Requires terminal block)
2	**IC693MDL940**	Discrete Output Module, Relay 2.0 A per point Form A, 16 points (Terminal block included)
1	**IC693ALG223**	Analog Input Module, 16 channels, current. (Terminal block included)
2	**IC693ALG392**	Analog Output Module, supports voltage and current, 8 channels (Terminal block included)
1	**IC693PBM200**	Profibus Master Module, supports V0
1	**IC693CHS392**	10 slot I/O Expansion Rack
1	**IC693CBL312**	Rack Expansion Cable, 0.15 meter
1	**IC693ACC307**	I/O Bus Terminator Plug
6	**IC694TBB032**	Terminal Block, Box Style
1	**BC646MPS001**	Logic Developer - PLC Standard - w/Programming Cable
		Servo and Motor
1	**IC800VMM10LBKSE25**	VersaMotion 1000 Watt Low Inertia Servo Motor with Brake. Motor has keyway and oil seal
1	**IC800VMA102**	Servo Amplifier, 1000 Watts, 220 VAC
1	**IC800VMCB1030**	Brake and Power Cable for 1000 Watt Servo Motor with Brake, 3 m (9.8 feet)
1	**IC800VMCE1030**	Encoder Cable for 1000 Watt and greater, 3 m (9.8 feet)
1	**IC800VMTBC005**	I/O Terminal Block and Cable (0.5 meter)
1	**IC800VMCS030**	Communications Cable from Servo Driver to PC, 3 m (9.8 feet)
		Programming Software for Control, Display and Motion
1	**BC646MPS001**	Machine Edition Standard Development Suite with Proficy GlobalCare Complete. Includes VersaMotion configuration tool, View Development for QuickPanel and PLC Standard with programming cable. Proficy GlobalCare with 15 months of free upgrades which is renewable on an annual basis.